# GP160F/160DF/160

# SERVICE MANUAL

**REVISION 0**

Canon

**FEB. 1999** **FY8-13G2-000**

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# INTRODUCTION

This service manual provides basic information required for performing field service to maintain the product quality and functions of the this machine. The structure of the manual is as described below.

| Material Name | Content |
|---|---|
| Main unit service manual | The main unit and cassette feeder's; functions, mechanism, disassembly, assembly, adjustment methods, etc. |
| G3 FAX manual | The main unit's G3 facsimile functions. |
| ADF | The functions, mechanism, disassembly, assembly, adjustment method, etc. of the main unit's ADF. |

Each chapter consists of the following sections.

Chapter 1, "Introduction," : Features, specifications, operation methods, copying process.

Chapter 2, "Basic operation," : Explanation of the machine's basic operations

Chapter 3, "Exposure system," : Explanation of the exposure system's mechanical / electrical system operating principles, timing, disassembly, assembly and adjustment methods.

Chapter 4, "Image processing system," : Explanation of the CCD, analogue / digital image processing, disassembly, assembly and adjustment methods.

Chapter 5, "Laser exposure system," : Explanation of the laser exposure system's mechanical / electrical system operating principles, timing, disassembly, assembly and adjustment methods.

Chapter 6, "Image formation system," : Explanation of the image formation system's mechanical / electrical system operating principles, timing, disassembly, assembly and adjustment methods.

Chapter 7, "Pick-up / Feed system," : Explanation of the pick-up / feed system's mechanical / electrical system operating principles, timing, disassembly, assembly and adjustment methods.

Chapter 8, "Fixing system," : Explanation of the fixing system's mechanical / electrical system operating principles, timing, disassembly, assembly and adjustment methods.

Chapter 9, "Outer cover / auxiliary control system," : Explanation of the outer cover / auxiliary control system's mechanical / electrical system operating principles, timing, disassembly, assembly and adjustment methods.

Chapter 10, "Cassette feeder," : Explanation of the cassette feeder's mechanical / electrical system operating principles, timing, disassembly, assembly and adjustment methods.

Chapter 11, "Installation," : Conditions relating to the place of installation, and the installation procedures.

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Chapter 12, “Maintenance and Inspection,” : Table of periodic replacement parts and consumables replacement targets, periodic service list and parts to be cleaned during a customer service call.

Chapter 13, “Troubleshooting,” : Standards / adjustments, operation failure countermeasures and delivery failure countermeasures

Appendix : General timing chart, general circuit diagram, etc..

The explanations in this manual are based on the following principles.

1. Each chapter gives an overview of each function’s purpose, role and the connection between the electrical and mechanical systems as well as the operation timing of each part.
   In the outline diagram, the ▭▭▭ signal shows the mechanical drive transmission. When the ▭▭▭ signal is shown with a signal name, it indicates the electric signal flow.
   In the explanation of this units digital circuit, “1” is indicated when the signal’s voltage level is high, and “0” is indicated when it is low. However, the voltage value will differ depending on the electrical circuit. Furthermore, the * in the signal value [DRMD*] shows the DRMD signal is “0” and ON.
   In each chapter, [Power supply ON] indicates the power supply SW has been turned “ON”, the front door, etc., has been shut, and power is being supplied to the copier.

2. This unit utilizes micro processors, however, due to the impossibility of checking the micro processor’s internal operation, an explanation of the micro processor’s operation has been omitted. Furthermore, assuming that internal repair of the print circuit board will not take place on the customer’s premises, the explanation of the circuit in the print circuit board’s circuit is limited to an outline explanation using a block diagram. Consequently, the electrical circuit explanations consist of 2 types, from the sensors to the main circuit board’s input section, and from the main circuit board’s output section to the load, and block diagrams by function.

Changes of the contents made for the sake of product improvements will be notified in Service Information (Technical Information).

Gaining a sound and thorough understanding of the copier through careful reading of this service manual and the subsequently issued Service Information (Technical Information) bulletins is the only way to develop the technical skill necessary to prolong product quality and functionality and the practical ability to be able to determine the cause of breakdowns.


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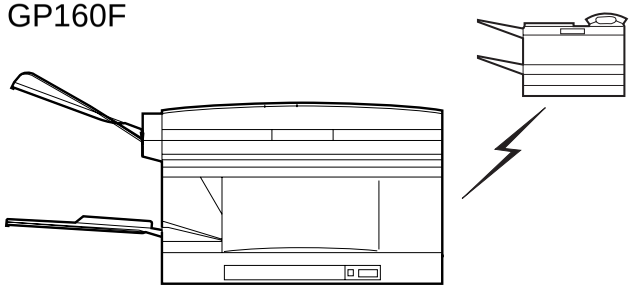
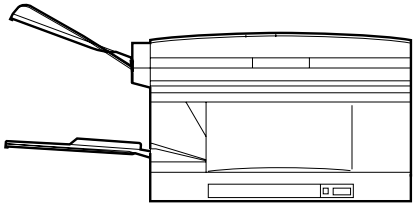
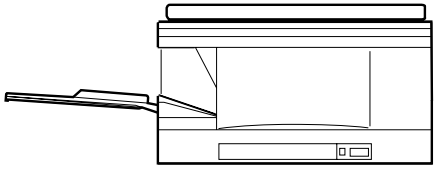
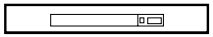
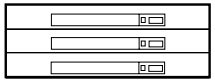
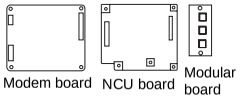
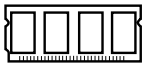
# System configuration

| Installation options | Main unit configuration | | |
|---|---|---|---|
| | GP160F<br>  <br>Digital black and white copier and facsimile | GP160DF<br>  <br>Digital black and white copier (with ADF) | GP160<br>  <br>Digital black and white copier<br>(Copy board cover model) |
| <br>ADF-H1 | Standard equipment | Standard equipment | Option |
|  <br>Cassette Unit D1 | Option | Option | Option |
|  <br>Cassette unit E1 | Option | Option | Option |
|  <br>Modem board NCU board Modular board<br>Super G3 FAX board | Standard equipment | Option | Option |
|  <br>8MB expanded memory | Option | Option | Option |

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# CHAPTER 1

# INTRODUCTION

This chapter provides an overview of the unit's specifications, operating method and copying process.


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# I. FEATURES

**< Copy function >**

- 1200 equivalent × 600dpi high resolution copy
- Due to a new engine, high image quality printing with minute particle super fine toner (diameter 5 microns) has been made possible.
- Due to the integrated drum, toner cassette, the print inner assembly is refreshed when the cartridge is replace.
- 256 gradation readings, and realistic half tone rendering.
- Max. 5 way / max. 1100 sheets large volume multi-level pick-up.
- Dual operation - allows copying during fax transmission.

**< Fax function >**

- High speed Super G3 Fax 2 second transmission (33.6kbps) provided as standard for ordinary telephone lines.
- Able to send and receive A3 size direct copy.
- 400dpi scanning resolution ultra high image quality (ultra fine mode).
- 600dpi recording resolution ultra high image quality, standard mode 600dpi printing.
- Standard 1megabyte memory (roughly 64 sheets), possibility to expand to maximum 9 megabytes (roughly 576 sheets).

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# II. SPECIFICATIONS

## 1. Type

| Item | Specifications |
|---|---|
| Main unit | Desk top |
| Copyboard | Fixed |
| Light source | Xenon lamp |
| Lens | Fixed focal lens |
| Photosensitive medium | OPC ($\phi$ 30) |

## 2. Method

| Item | | Specifications |
|---|---|---|
| Copying | | Indirect electrostatic copying method |
| Charging | | AC roller charging method |
| Exposure | | Semiconductor laser |
| Copy density adjustment | | Automatic or manual |
| Developing | | Dry single component jumping method (single unit drum cartridge) |
| Pick-up | Automatic | Cassette |
| | Manual | Multi-feeder |
| Transfer | | Roller charging method |
| Separation | | Electrostatic separation (static charge elimination) + curvature separation |
| Cleaning | | Rubber blade |
| Fixing | | SURF Fixing |


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## 3. Functions

| Item | | Specifications |
|---|---|---|
| Types of document | | Sheet, book, three dimensional objects (up to max. 2kg) |
| Max. document size | | A3 / 11 × 17 |
| Wait time | | 15 seconds or less from power ON (20°C) |
| | | 7 seconds or less from the energy saver mode being cancelled |
| First copy time | | 12 seconds or less (main unit cassette pick-up, 1-to-1 copy, A4, no AE) |
| Continuous copying | | 1 to 99 sheets |
| Pick-up capacity | | Each cassette 250 sheets *1, multi-feeder 100 sheets (80g/m$^2$) |
| Delivery tray capacity | | 100 sheets *2 |
| Copy size | Cassette pick-up | Max. : A3 / 11 × 17<br>Min. : A5 |
| | Multi-feeder pick-up | Max. : A3<br>Min. : A5 |
| Types of copy paper | Cassette pick-up | Plain paper 64 to 90g/m$^2$, recycled paper 64 to 90g/m$^2$, tracing paper (GNT-80) *1 |
| | Multi-feeder pick-up | Plain paper 64 to 128g/m$^2$, tracing paper (SM-1) labels, recycled paper 64 to 128g/m$^2$, OHP *2, tracing paper (GNT-80)*3 |
| Cassette specifications | | With tab, universal |
| Non image width | Leading edge | 4.0 ± 2.0mm |
| | Trailing edge | 2.5 ± 2.0mm |
| | Front | 2.5 ± 2.0mm |
| | Rear | 2.5 ± 2.0mm |
| Auto clear | | Yes (Standard 2 min., possible to change in units of 1 min. between 0 to 9 min) |
| Energy saver | | Yes (Standard 3 min., possible to change in units of 1 min. between 3 to 30 min) |
| Option *4 | | Cassette feeder (1 step type / 3 step type), 8MB expanded memory, ADF, FAX board |

*1: 50 or less sheets of tracing paper (GNT-80) by cassette.
*2: 50 or less sheets of OHP sheets by cassette (designated paper).
*3: 1 or less sheets of tracing paper (GNT-80) by multi-feeder.
*4: Differs depending on the main unit configuration.

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## 4. Other

| Item | | Specifications |
|---|---|---|
| Operating environment | Temperature range | 5 to 35°C |
| | Humidity range | 10 to 90% RH |
| | Atmospheric pressure range | 709 to 1013hpa |
| Power supply | Main unit<br>GP160<br>• 230V(ITA): PNSxxxxx<br>• 230V(UK): QCTxxxxx<br>• 230V(FRN): SBTxxxxx<br>• 230V(GER): TBTxxxxx<br>• 230V(AMS): UEHxxxxx<br>• 230V(CA): RCXxxxxx<br>• 230V(Others): PHXxxxxx<br>GP160F<br>• 230V(ITA): PHTxxxxx<br>• 230V(UK): QCMxxxxx<br>• 230V(FRN): SBSxxxxx<br>• 230V(GER): TBRxxxxx<br>• 230V(AMS): UEGxxxxx<br>• 230V(CA): RCWxxxxx<br>• 230V(Others): PHMxxxxx | GP160DF<br>• 230V(ITA): PHLxxxxx<br>• 230V(UK): QCLxxxxx<br>• 230V(FRN): SBRxxxxx<br>• 230V(GER): TBQxxxxx<br>• 230V(AMS): UEFxxxxx |
| | Cassette Feeding Module-D1 | Supplied by main unit : ZCRxxxxx |
| | Cassette Feeding Module-E1 | Supplied by main unit : ZHRxxxxx |
| Power consumption | Maximum | Approx. 800W |
| | Standby | Approx. 20W |
| | Energy saving mode | Approx. 14W |
| Operating noise | When in operation | 66dB or less |
| | Standby | 40dB or less |
| Dimensions | Width | 616 (mm) / 24.25” |
| | Depth | 640 (mm) / 25.20” |
| | Height | 427 (mm) / 16.81” (Including ADF) |
| Mass | | 48.8kg 107.59 lb |
| Storage of consumable items | Copy paper | Store with the package closed and avoid humidity |
| | Cartridge | Refer to page 12-3 |


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## 5. Copy speed

| Reproduction mode | | Size | Copy paper size | No. of copies / minute |
|---|---|---|---|---|
| Direct copy | | A4 (210 × 297mm) | A4 | 16 |
| | | A3 (297 × 420mm) | A3 | 9 |
| | | B4 (257 × 364mm) | B4 | 10 |
| | | A4R (297 × 210mm) | A4R | 9 |
| | | B5 (182 × 257mm) | B5 | 16 |
| | | B5R (257 × 182mm) | B5R | 12 |
| | | A4 (148.5 × 210mm) | A5 | 12 |
| | | LTR (216 × 279mm) | LTR | 16 |
| | | LTRR (279 × 216mm) | LTRR | 9 |
| | | LGL (216 × 356mm) | LGL | 9 |
| | | 11 × 17 (279 × 432mm) | 11 × 17 | 9 |

Specifications are subject to change for the sake of product improvements.

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# III. NAMES OF PARTS

## A. External view

### Main unit

ADF standard equipment model

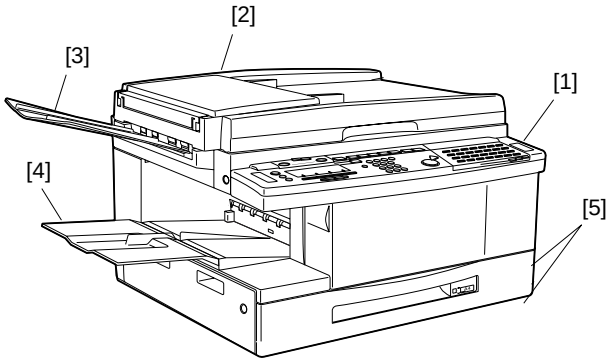


**Figure 1-301**

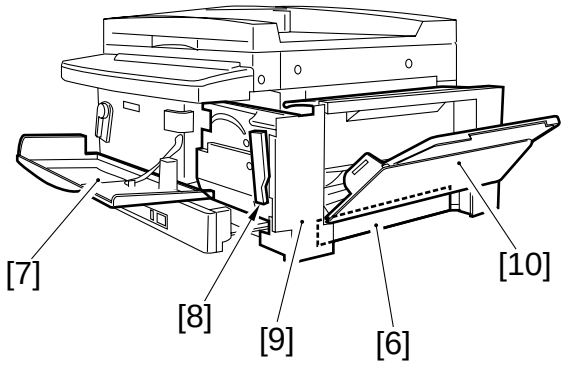


**Figure 1-302**

Copyboard cover model

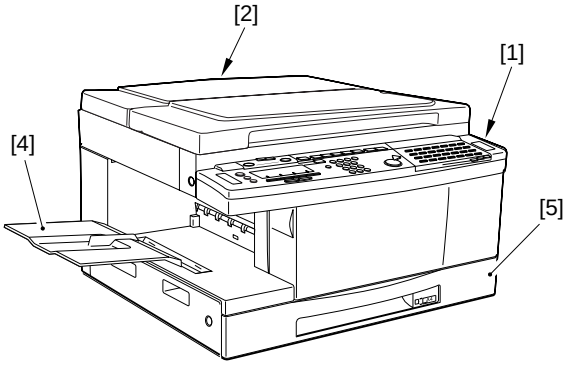


**Figure 1-303**

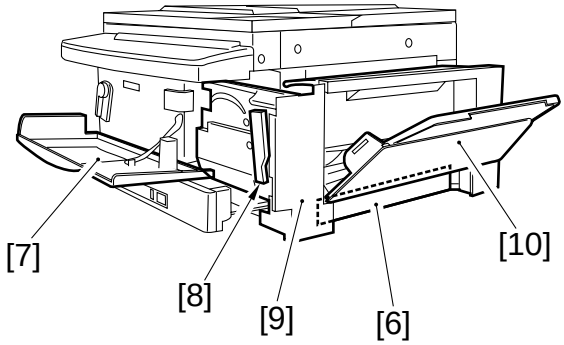


**Figure 1-304**

Cassette feeder (accessory)

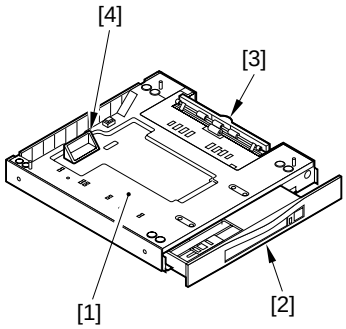


**Figure 1-305**


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### Main unit

[1] Control panel
[2] ADF
[3] Document delivery tray
[4] Delivery tray
[5] Cassette
[6] Right lower cover
[7] Front cover
[8] Printer unit release handle
[9] Printer unit
[10] Multi feeder tray

### Cassette feeder (accessory)

[1] Cassette feeder
[2] Cassette
[3] Right door
[4] Feeder lifting handle

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## B. Cross sectional diagram

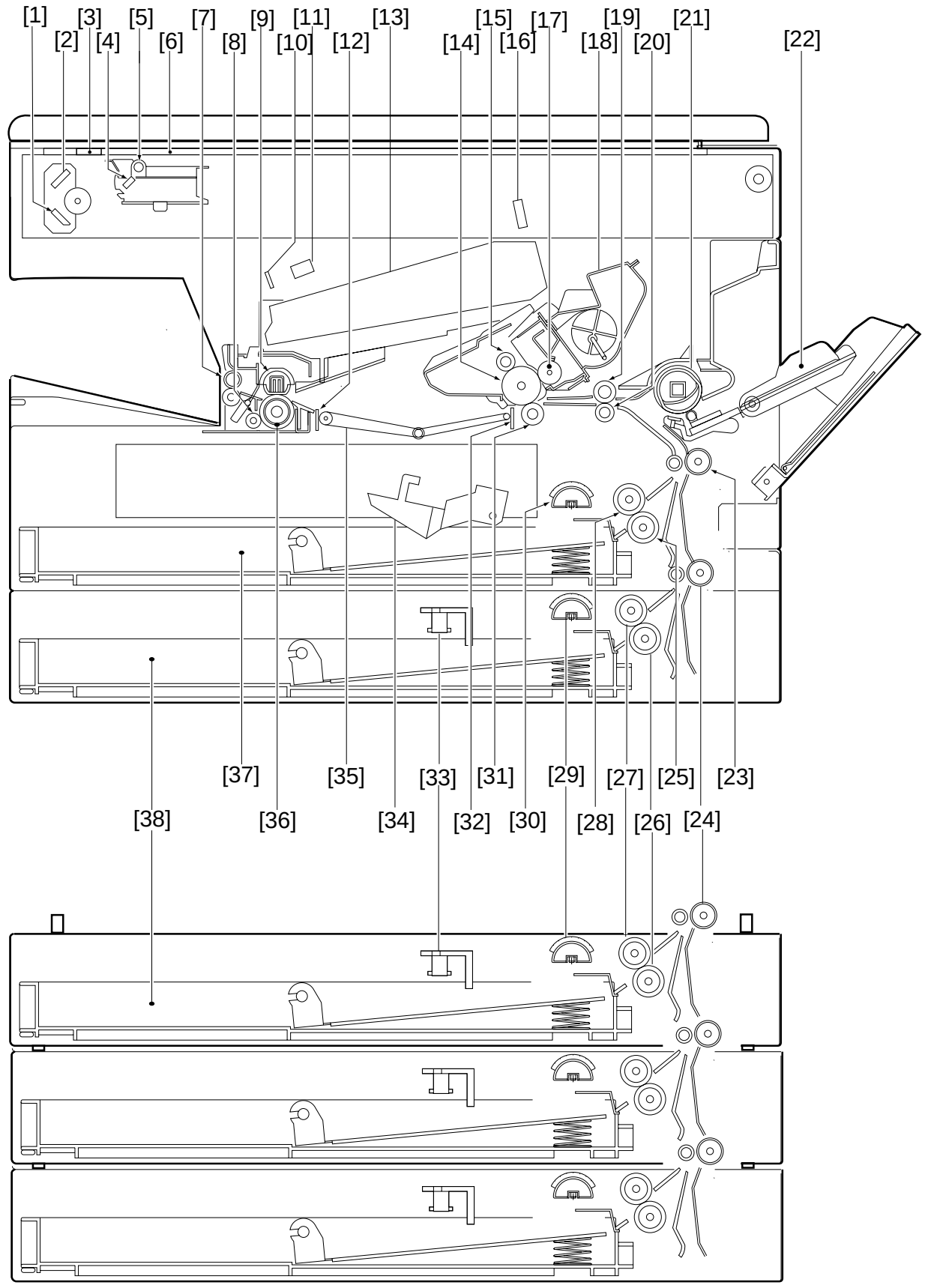


**Figure 1-306**


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[1] Mirror 3
[2] Mirror 2
[3] White reference assembly
[4] Mirror 1
[5] Document scanning lamp
[6] Copyboard glass
[7] Fixing delivery roller
[8] Cleaning roller
[9] Fixing film
[10] CCD
[11] Lens
[12] Charge eliminator
[13] Laser scanner unit
[14] Photosensitive drum
[15] Primary charging roller
[16] Mirror 4
[17] Developing cylinder
[18] Cartridge
[19] Registration pressure roller
[20] Registration roller
[21] Multi-feeder pick-up roller
[22] Multi-feeder tray
[23] Vertical path roller (Main unit pick-up assembly)
[24] Vertical path roller (Cassette feeder)
[25] Separation roller (Main unit pick-up assembly)
[26] Separation roller (Cassette feeder)
[27] Feed roller (Cassette feeder)
[28] Feed roller (Main unit pick-up assembly)
[29] Pick-up roller (Cassette feeder)
[30] Pick-up roller (Main unit pick-up assembly)
[31] Transfer charging roller
[32] Separation static charge elimination
[33] Paper sensor lever (Cassette feeder)
[34] Paper sensor lever (Main unit pick-up assembly)
[35] Feed assembly
[36] Fixed pressure roller
[37] Paper cassette (Main unit)
[38] Paper cassette (Cassette feeder)

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# IV. OPERATION EXPLANATION

## A. Control panel

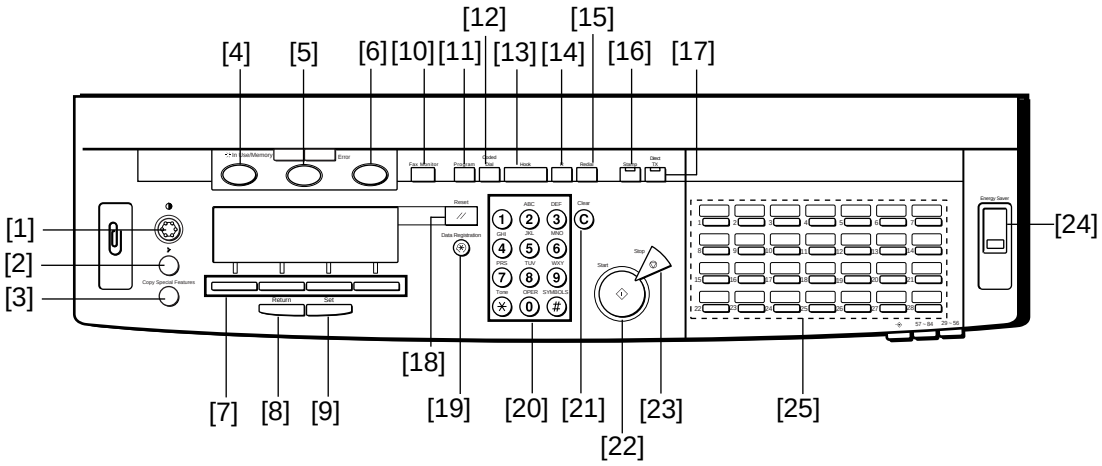


**Figure 1-401**


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| No. | Key name | Function outline |
|---|---|---|
| [1] | Display contrast VR | Adjusts the control panel contrast. |
| [2] | Collate key | Performs sort copying when copying with the ADF. |
| [3] | Copy special features | Performs frame erasing, margin, transferring and 2 in 1 copying. |
| [4] | COPY | Changes over to the copy mode. |
| [5] | FAX* | Changes over to the fax mode. |
| [6] | PRINT/SCAN* | Changes over to the printer mode. |
| [7] | Display selection | Selects functions shown in the display. |
| [8] | Return | Returns to the previous display. |
| [9] | Set | Confirms the registration/setting. |
| [10] | Fax Monitor* | Confirms the transmission conditions, clears transmission reservations. |
| [11] | Program* | Registers a single operation that can be selected by simply pushing this key. |
| [12] | Coded Dial* | Uses speed dial. |
| [13] | Hook* | Ability to listen to the other party's response through the speaker. |
| [14] | R* | Press to dial an outside telephone number, or an extension number, when the fax is connected through a swichboard (PBX). |
| [15] | Redial* | Redials the last number dialed. |
| [16] | Stamp* | Stamps a completed transmission. |
| [17] | Direct TX* | Executes direct transmission. |
| [18] | Reset | Resets the copy mode. |
| [19] | Data registration | Calls up the user mode setting display. |
| [20] | Numeric key | Dials the telephone number, sets the number of copies, etc.. |
| [21] | Clear | Clears the registration/setting. |
| [22] | Start | Starts transmission / copying. |
| [23] | Stop | Stops transmission / copying. |
| [24] | Energy saver | Clears the energy saver mode. |
| [25] | One touch panel* | One touch dial key. |

*: Not available on copiers not equipped with the fax function
**: Not available on copiers not equipped with the printer function

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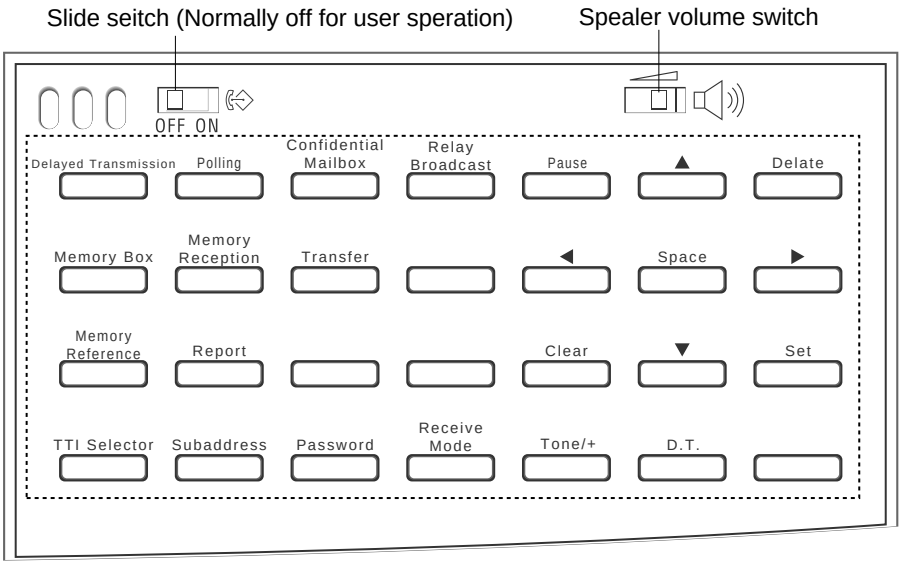


**Figure 1-402**

| Key name | Function outline |
|---|---|
| Delayed Transmission* | Designates the sending time of the transmission. |
| Polling* | Designates polling transmission. |
| Confidential Mailbox* | Designates confidential transmission. |
| Relay Broadcast* | Designates relay origination transmission. |
| Delete* | Deletes the input characters. |
| Pause | Inserts a pause in the telephone number. |
| Memory Box* | Prints documents when they have been stored in the Memory box, or when a document has been reception by the memory box. |
| Memory Reception* | Receives in memory and designates the printing of reception documents. |
| Transfer* | Designates the transfer of reception documents to other faxes. |
| Memory Reference* | Designates the confirmation or deletion of memory contents. |
| Report* | Designates the output of each kind of report and list. |
| Clear | Designates the deletion of registration/setting. |
| Set | Designates the confirmation of registered/set contents. |
| TTI Selector* | Used when changing the senders name. |
| Subaddress* | Used when performing a subaddress transmission. |
| Password* | Used when transmitting with a fax standard password. |
| Receive mode* | Designates switching to receive mode. |
| Tone/+ | Connects to information services that accept tone dialing only, even if you are using a rotary pulse line or enters a plus sign in a fax number. And enters a plus sign when registering your fax number. |
| DT | Press to confirm the dial tone when registering a telephone number. |
| Space* | Creates a space between rows of numbers or characters. |
| Shift key | Use to selecting items on the control panel. |

*: Not available on copiers not equipped with the fax function


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## B. Basic operation

The basic operations of the copy keys on the operation panel are listed below.

| Key name | Details |
|---|---|
| Reproduction ratio key | Selects fixed ratio change (2R2E) or zoom (50 to 200%). |
| Paper selection key | Selects the pick-up cassette. |
| Scanning mode key | Selects the scanning density (automatic, F1 to F9) and the image quality (character, character/photo, photo). |

**Table 1-401**

## C. Advanced features

The basic operations of the advanced copy feature keys on the operation panel are listed below.

| Key name | | Details |
|---|---|---|
| Page separation | | Performs left/right page separation copy in the book mode. Sets the left and right margins and designates the 2-page spread copy size. |
| Binding margin | | Creates a binding margin on the paper. Sets the margin position (left margin, right margin, top margin, bottom margin) and also the margin width (1 to 10mm). |
| Frame erasing | | Sets the frame erasing position. |
| | Document frame erasing | Copies with document frame erasing. |
| | Sheet frame erasing | Creates a margin around the outside of the document and copies. |
| | Book frame erasing | When copying books, etc., the surrounding and center margins are deleted. |
| | Punch hole erasing | Erases punch holes from the left margin of copied documents. |
| 2 in 1 copy | | Inputs the document size and paper size and designates 2 in 1 copying. |

**Table 1-402**

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# D. User mode

When the registration/setting key is pressed on the control panel, the user mode setting screen is displayed.

The construction of the user mode is shown below.

## 1. User mode for copies equipped with the fax function

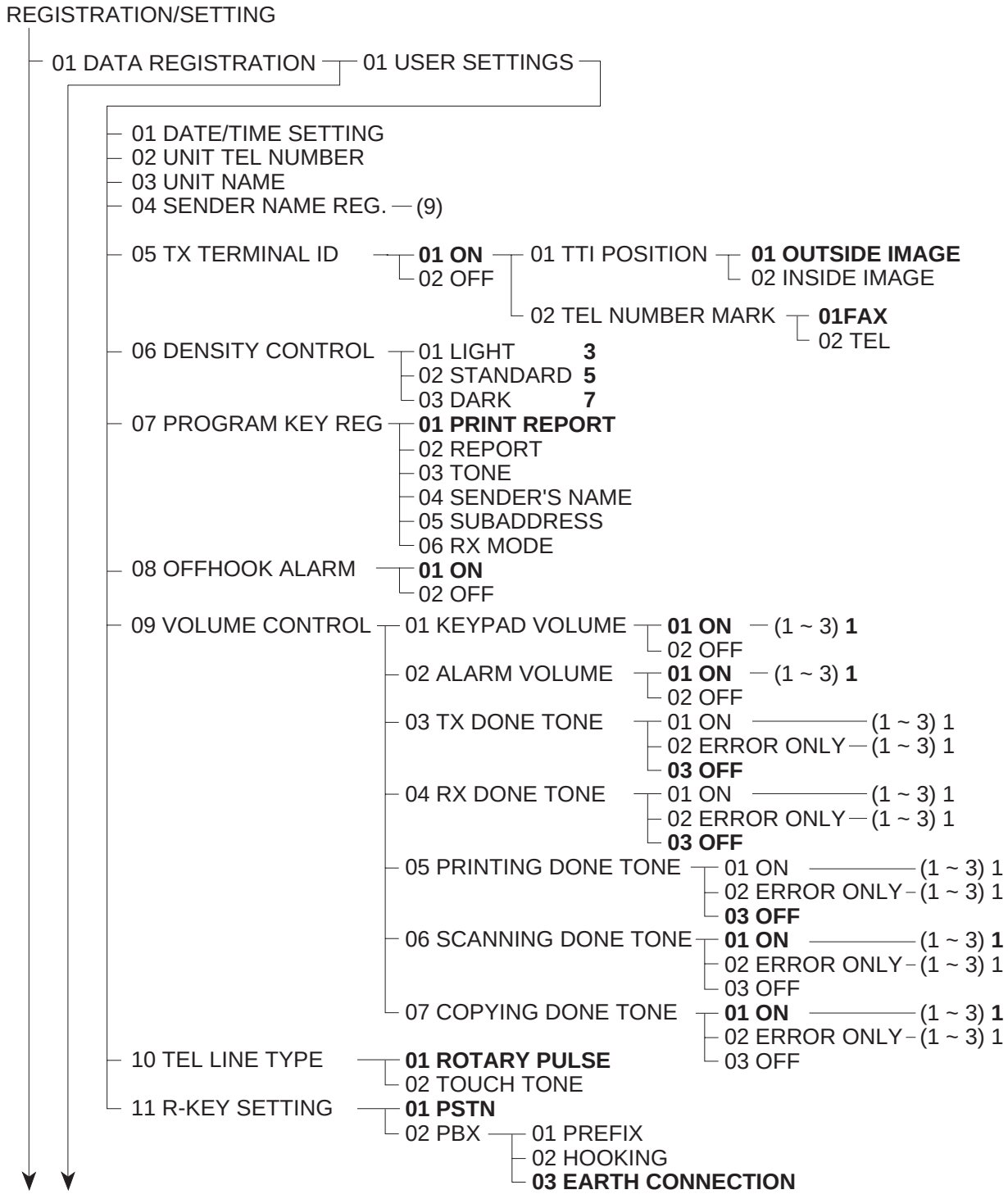


**Figure 1-403**


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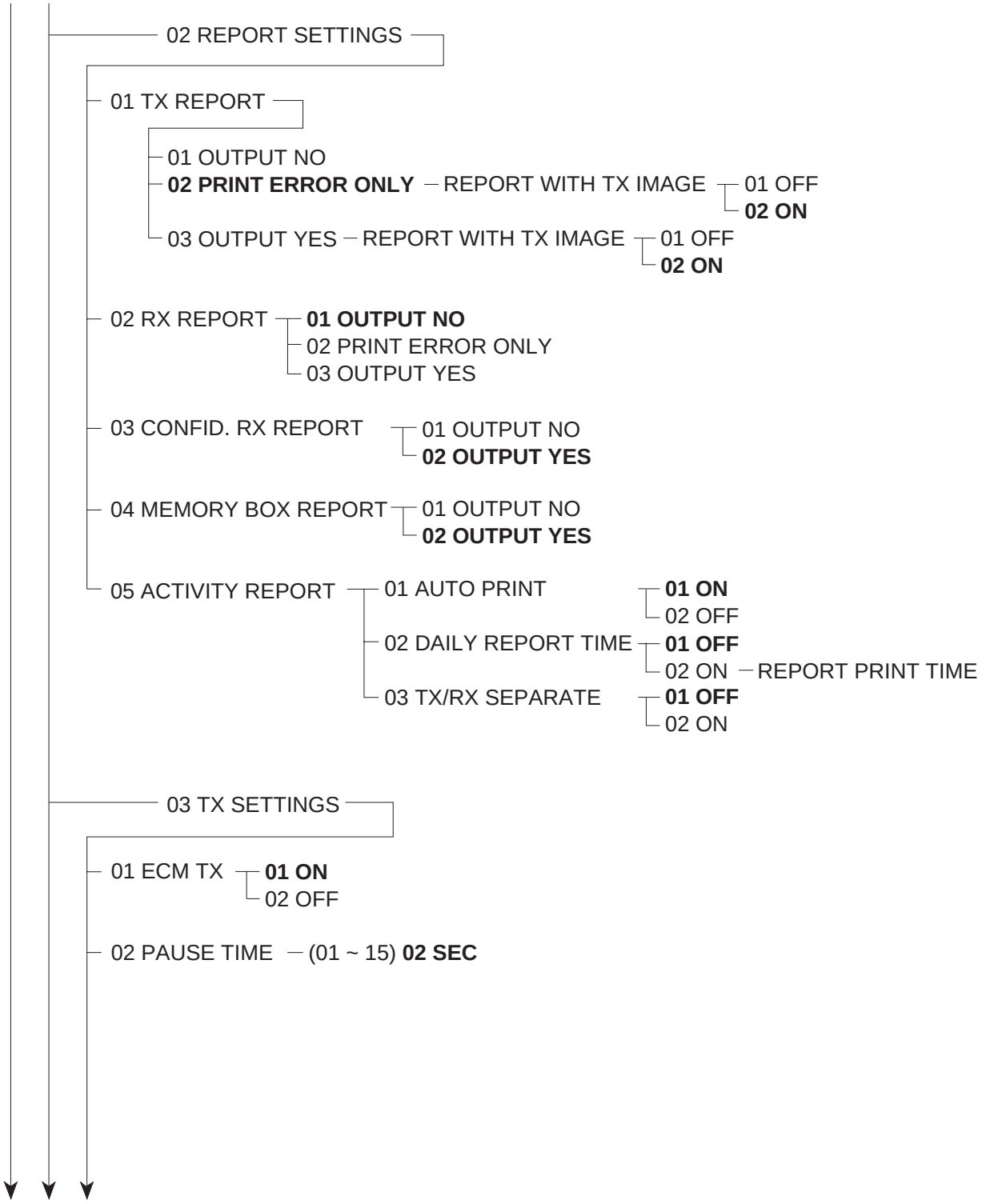


**Figure 1-404**

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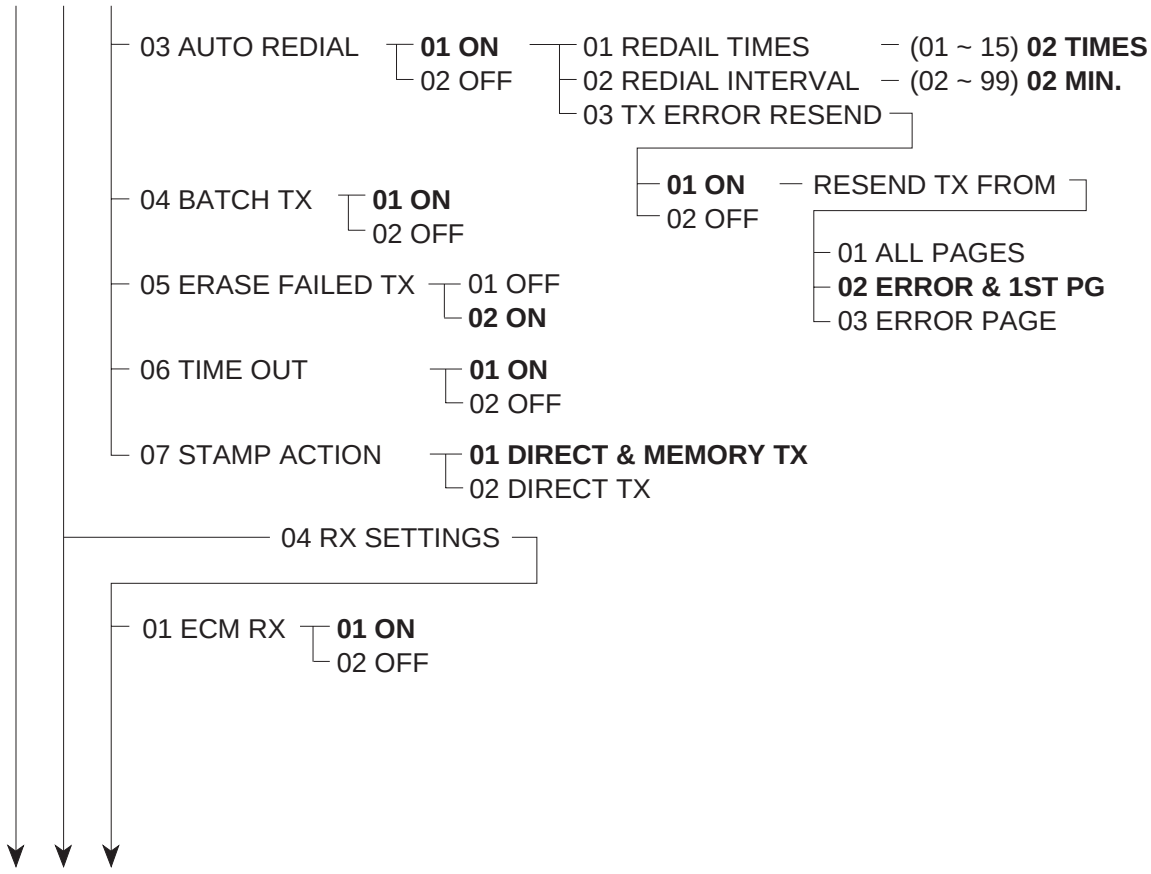


**Figure 1-405**


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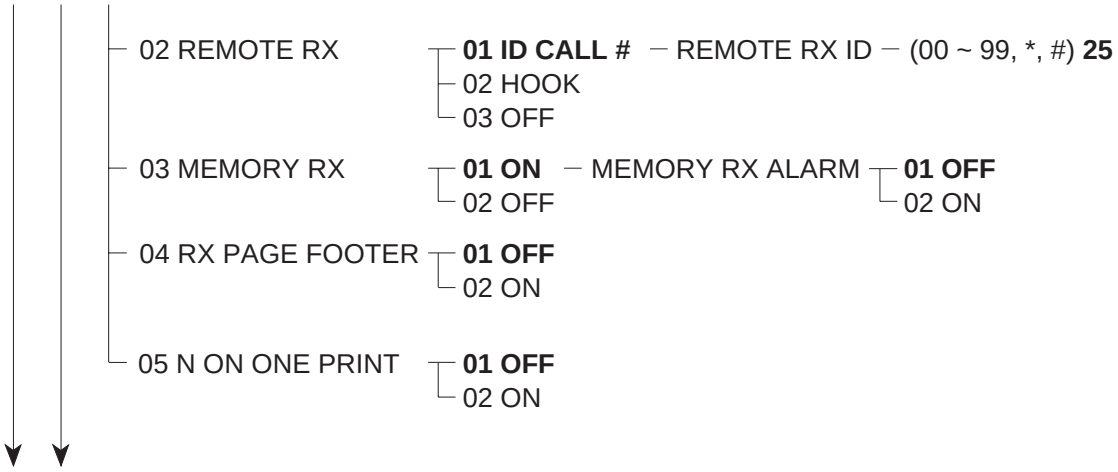


**Figure 1-406**



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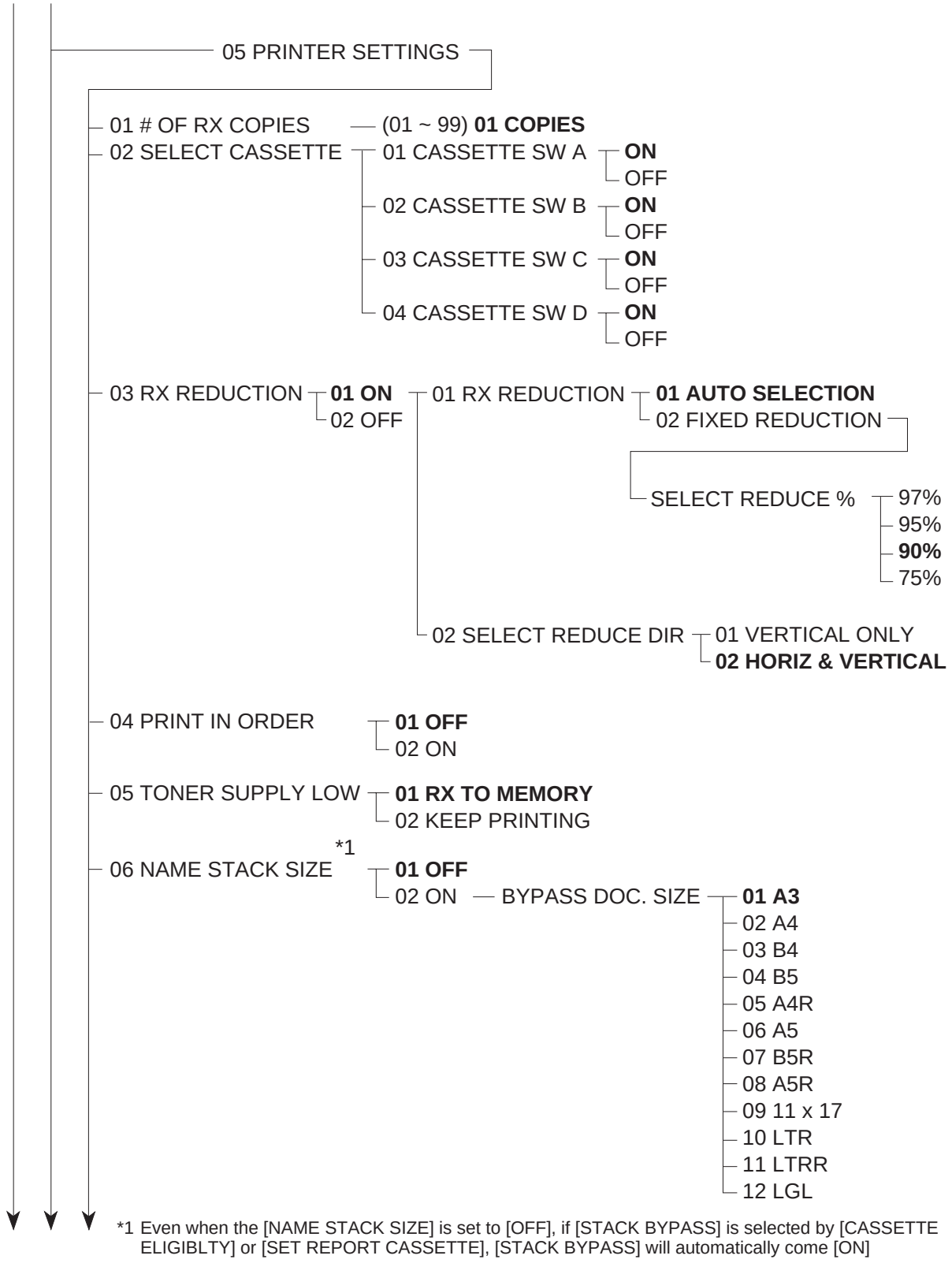


*1 Even when the [NAME STACK SIZE] is set to [OFF], if [STACK BYPASS] is selected by [CASSETTE ELIGIBLTY] or [SET REPORT CASSETTE], [STACK BYPASS] will automatically come [ON]

**Figure 1-407**


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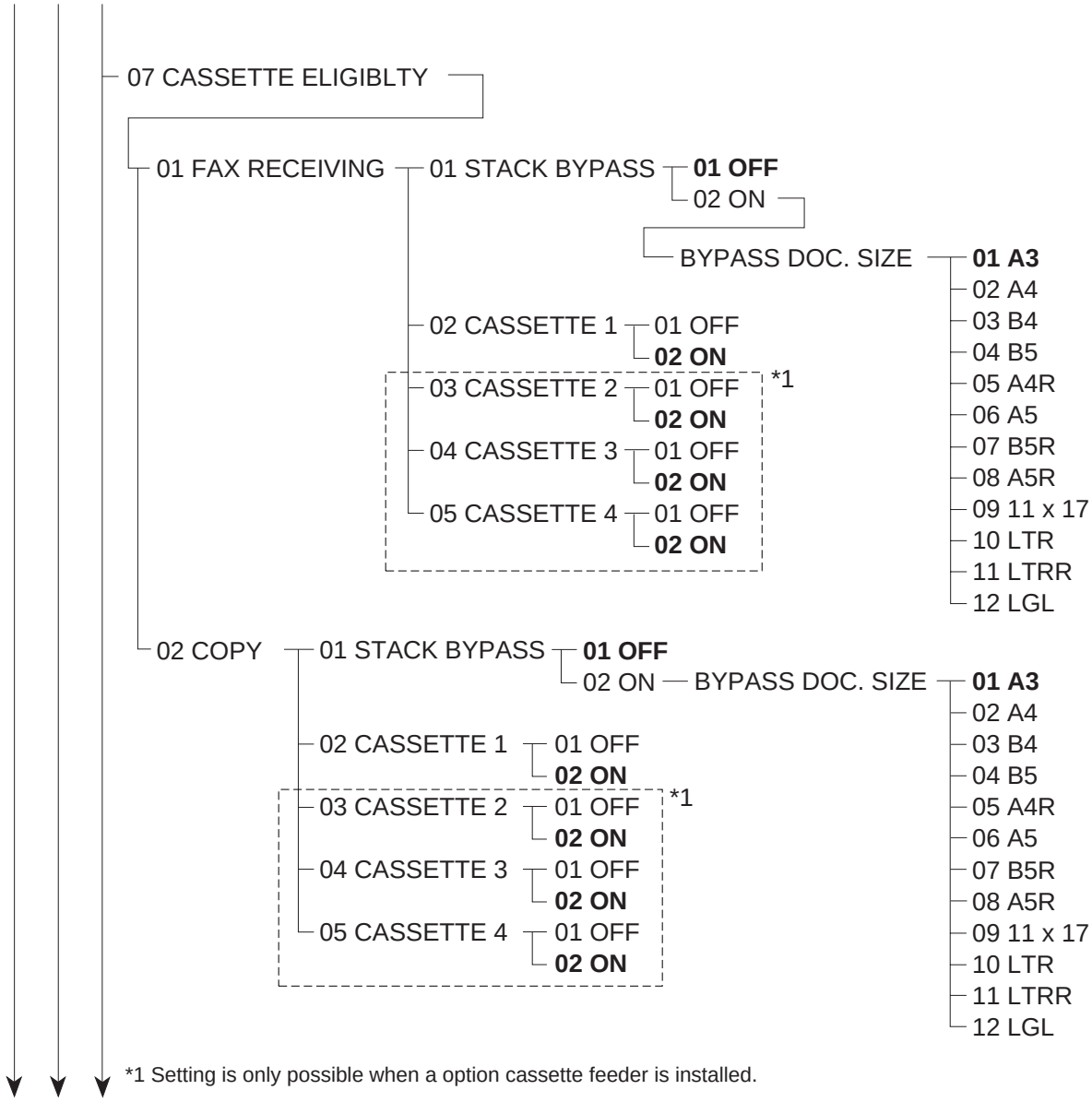


**Figure 1-408**



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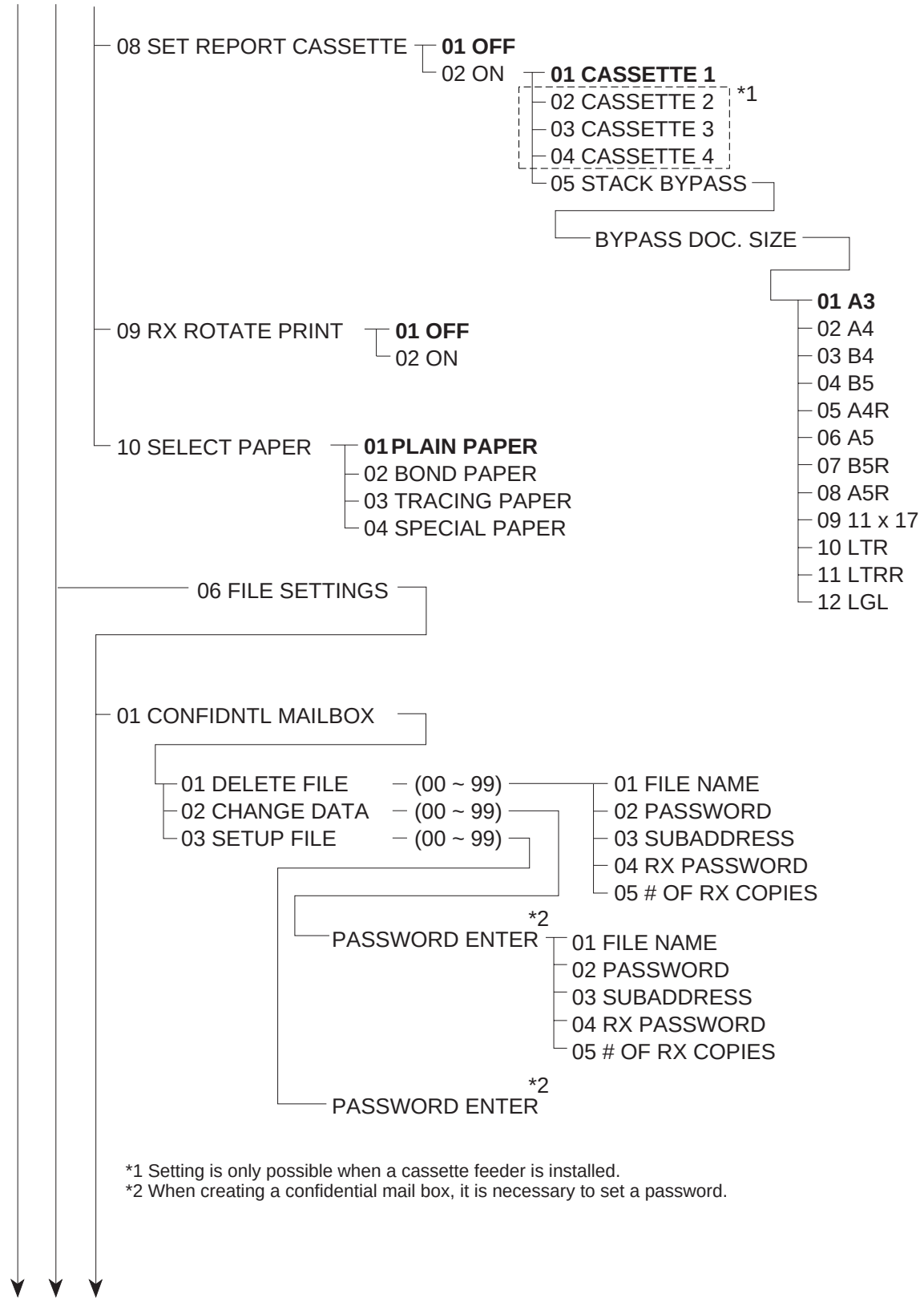


**Figure 1-409**


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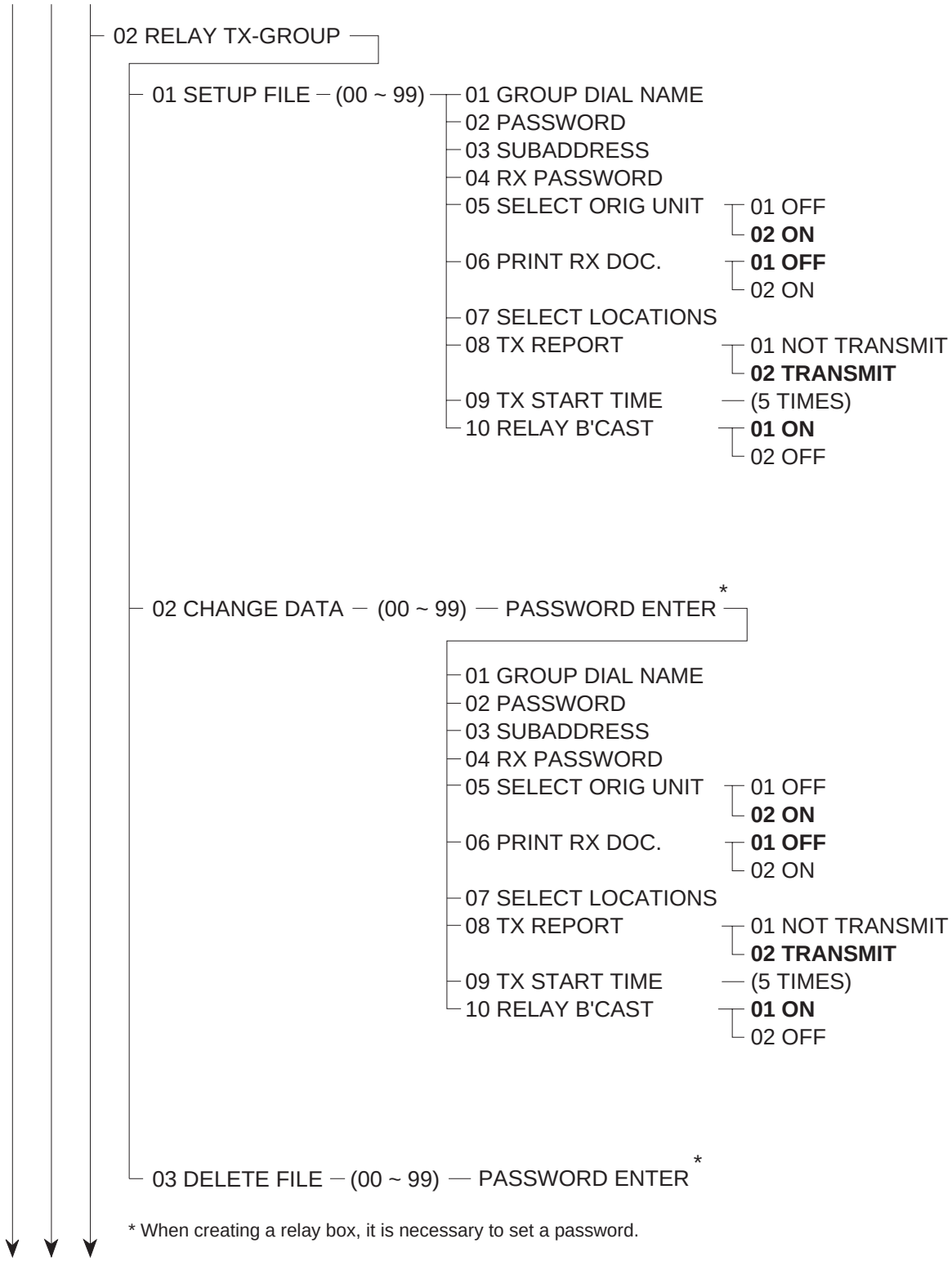


**Figure 1-410**

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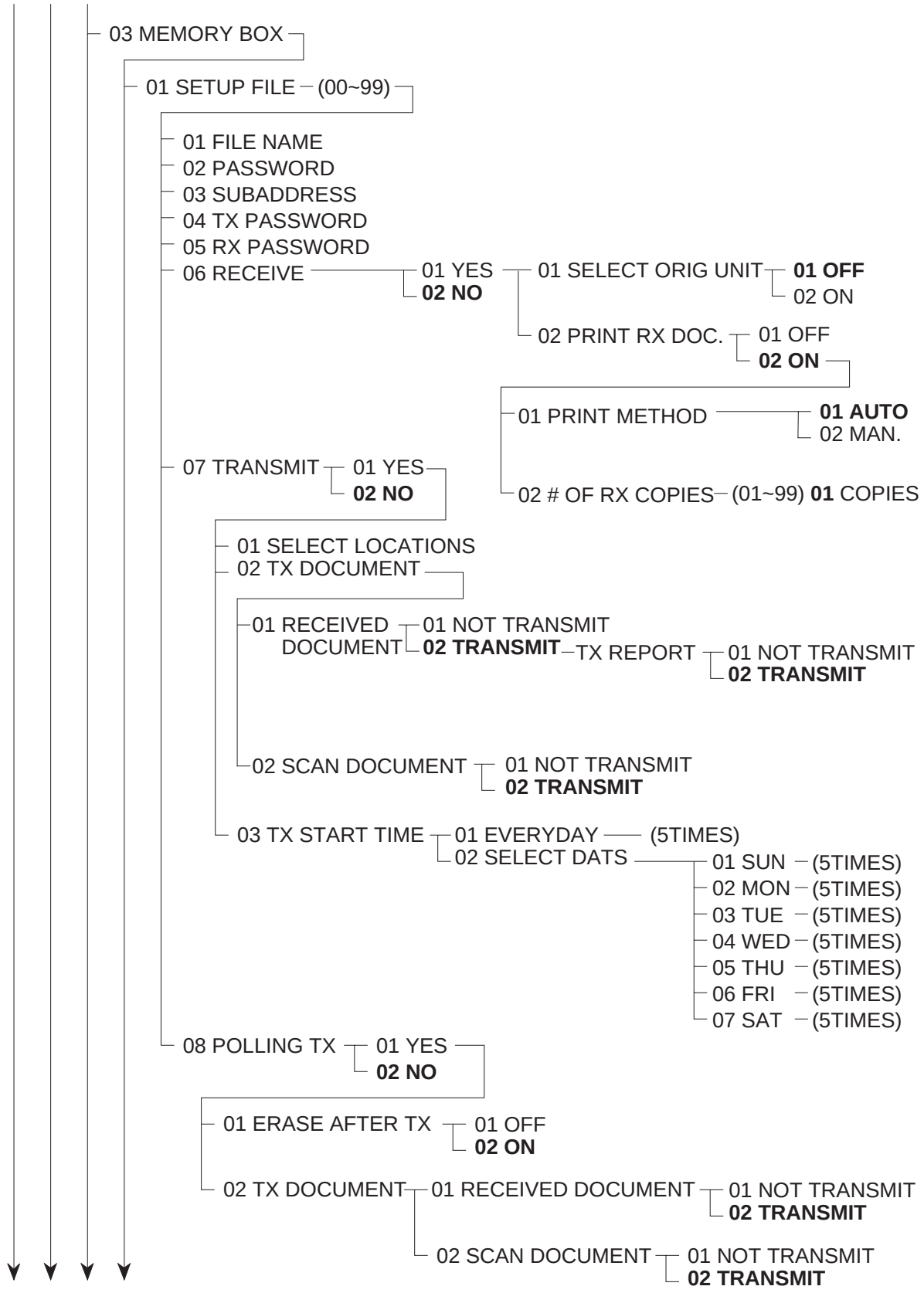


**Figure 1-411**


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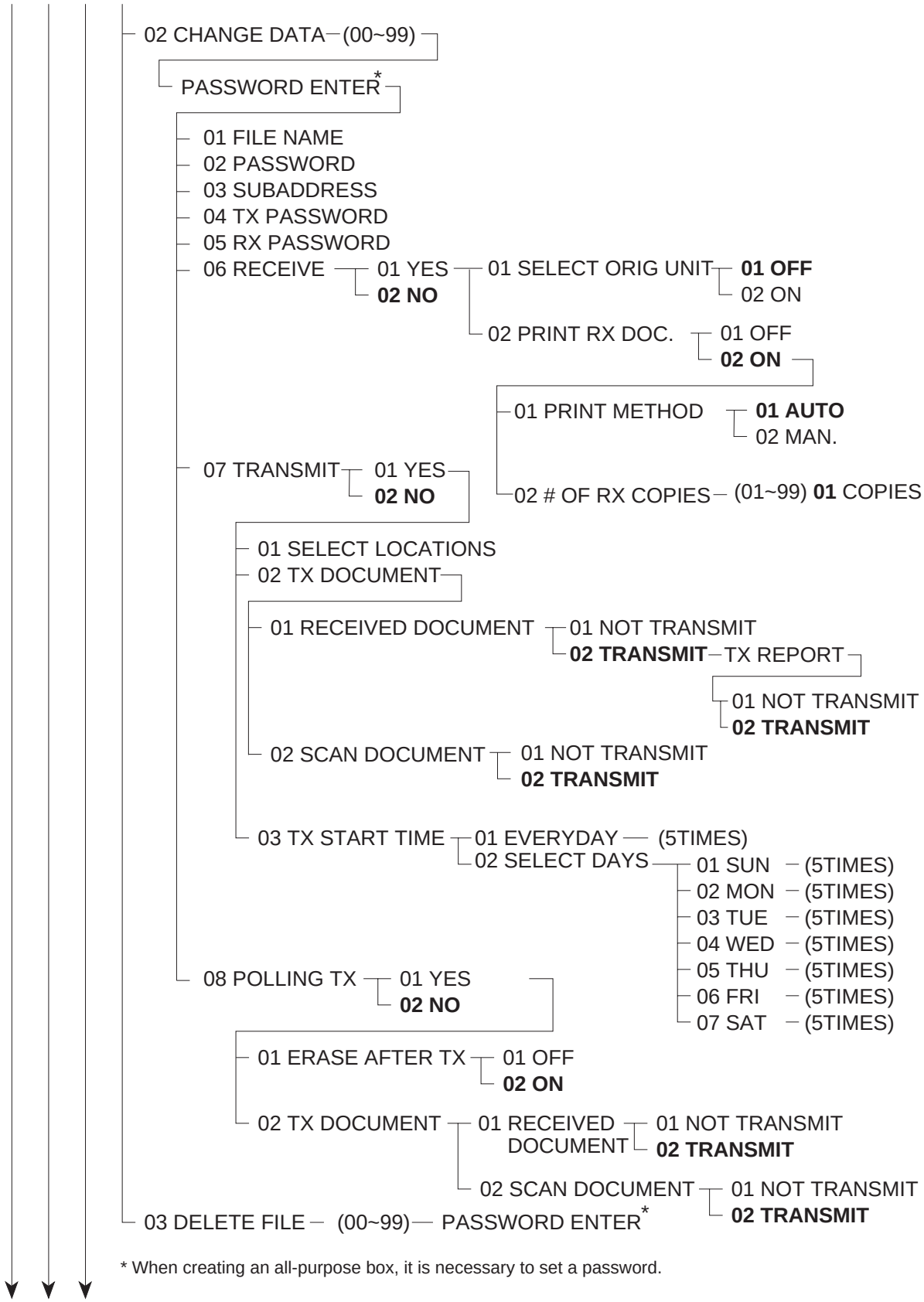


* When creating an all-purpose box, it is necessary to set a password.

**Figure 1-412**

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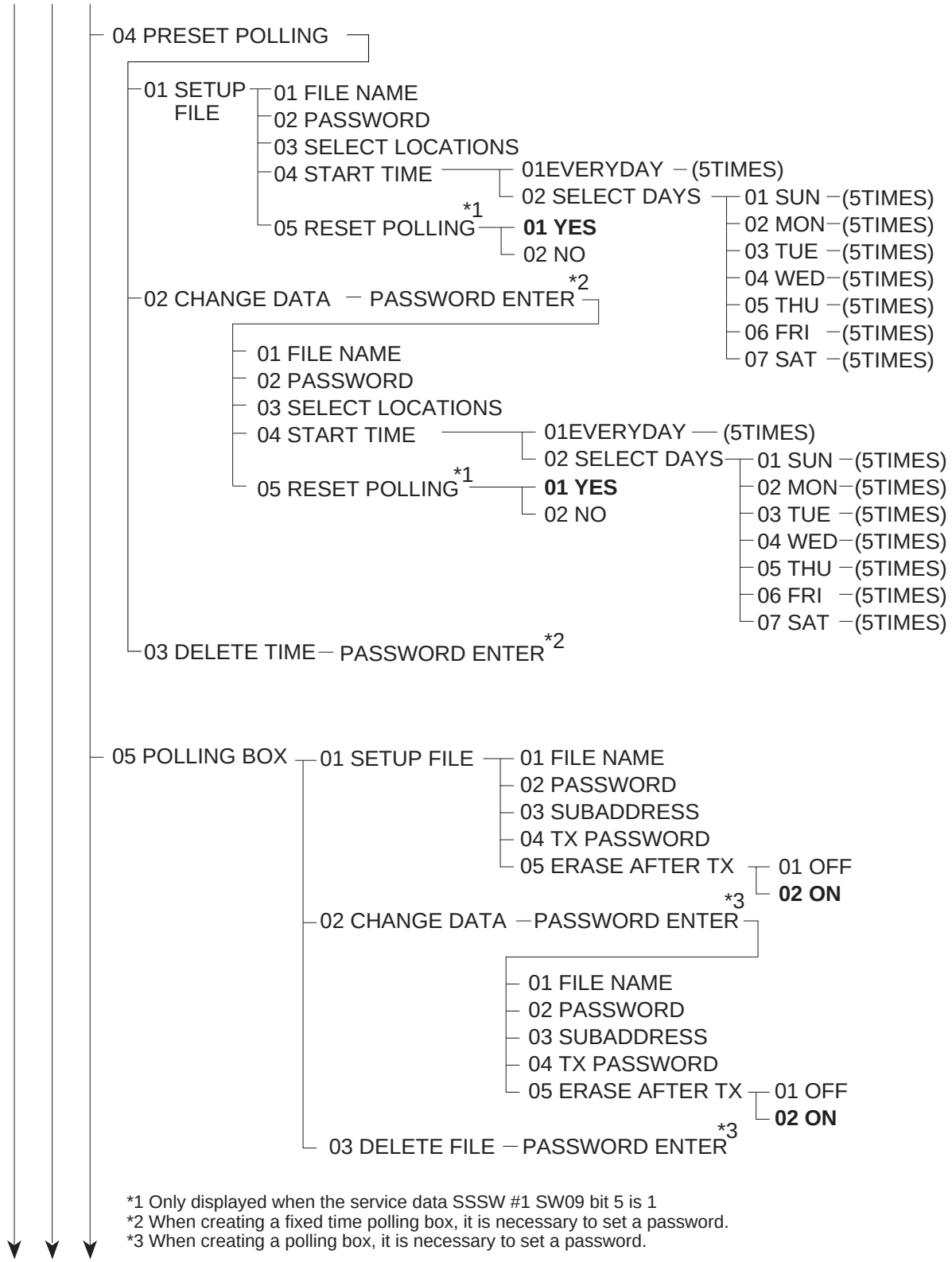


**Figure 1-413**


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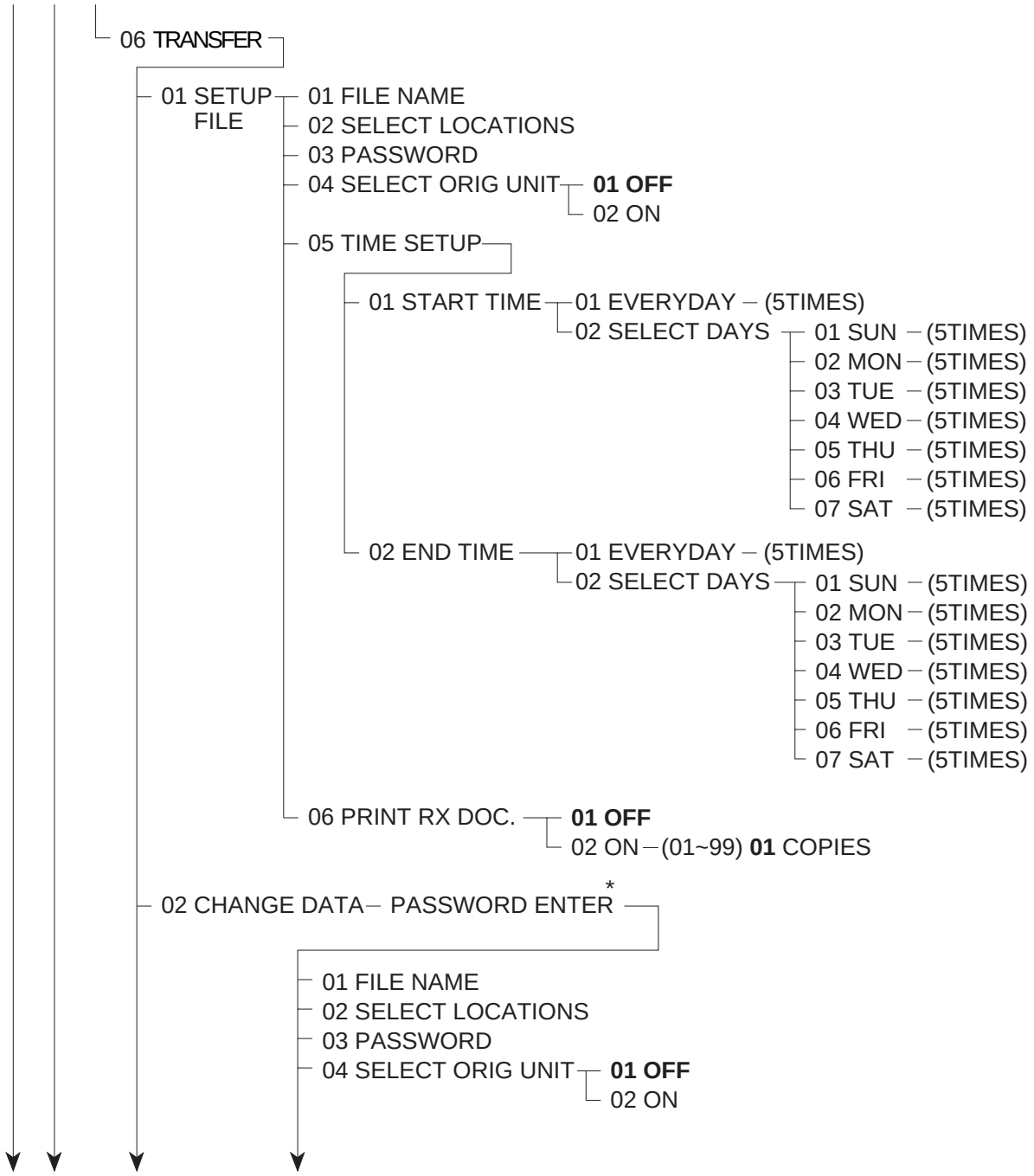


* When creating a transfer box, it is necessary to set a password.

**Figure 1-414**



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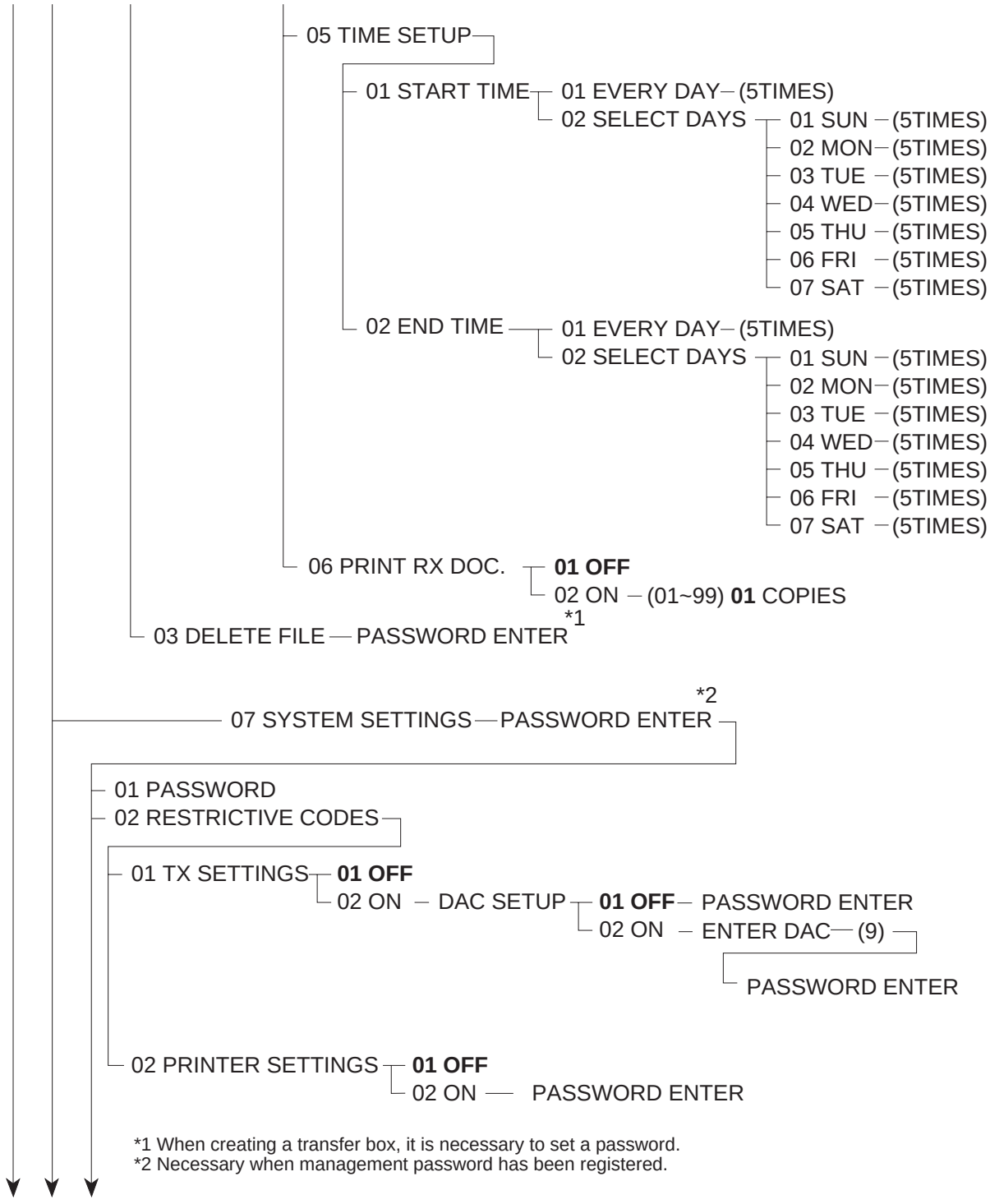


**Figure 1-415**


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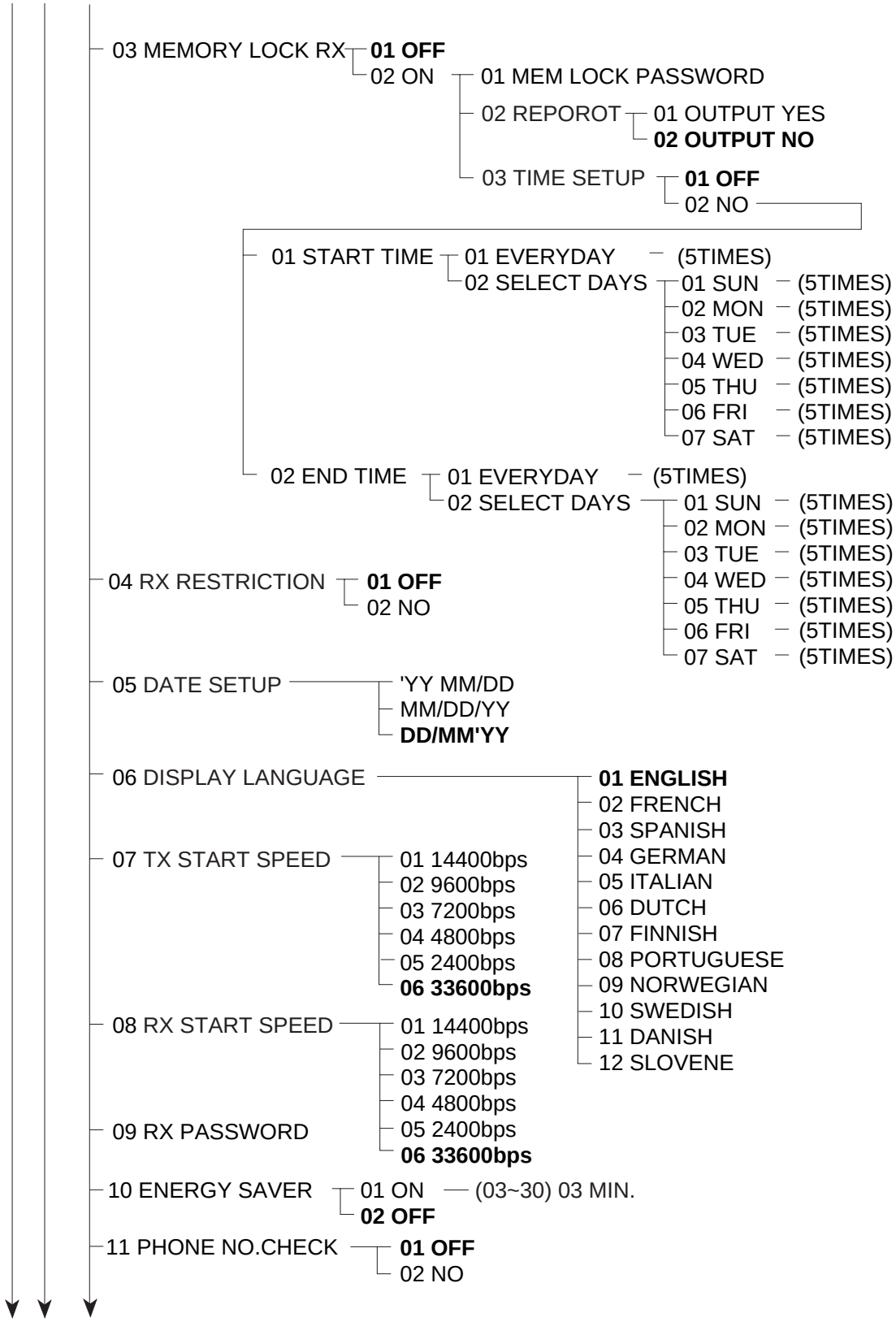


**Figure 1-416**

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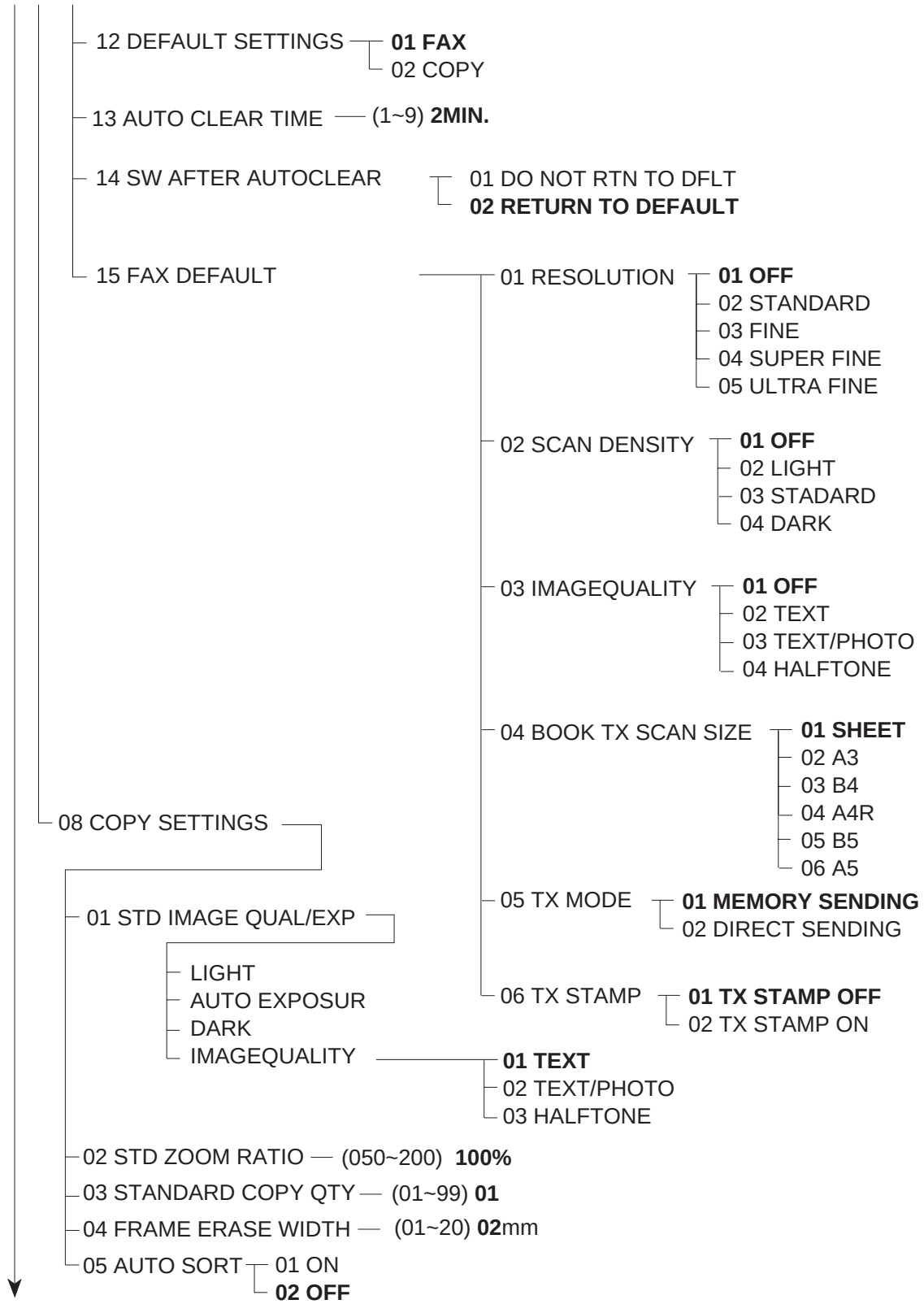


**Figure 1-417**


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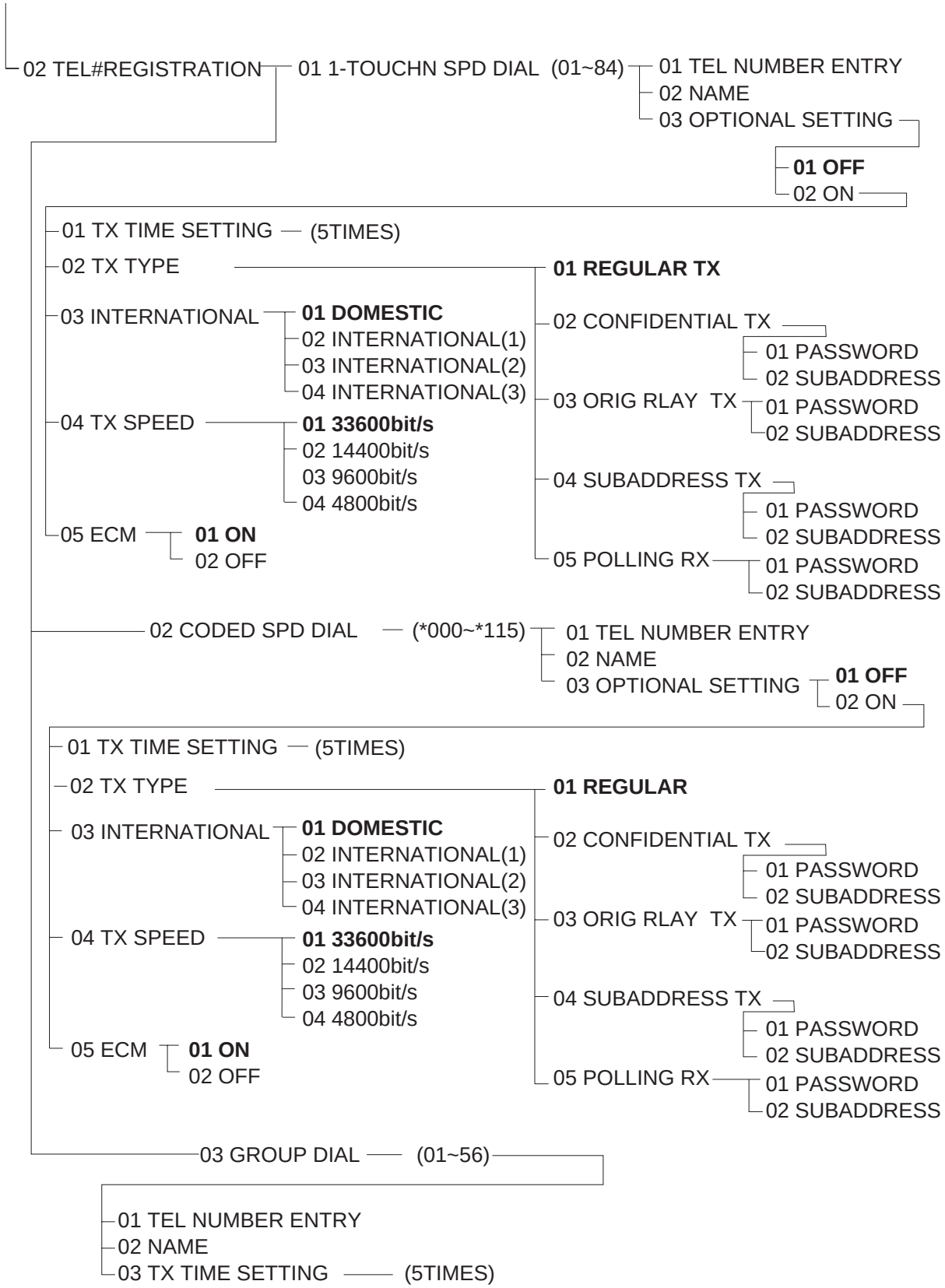


**Figure 1-418**

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## 2. User mode for copies equipped without the fax function

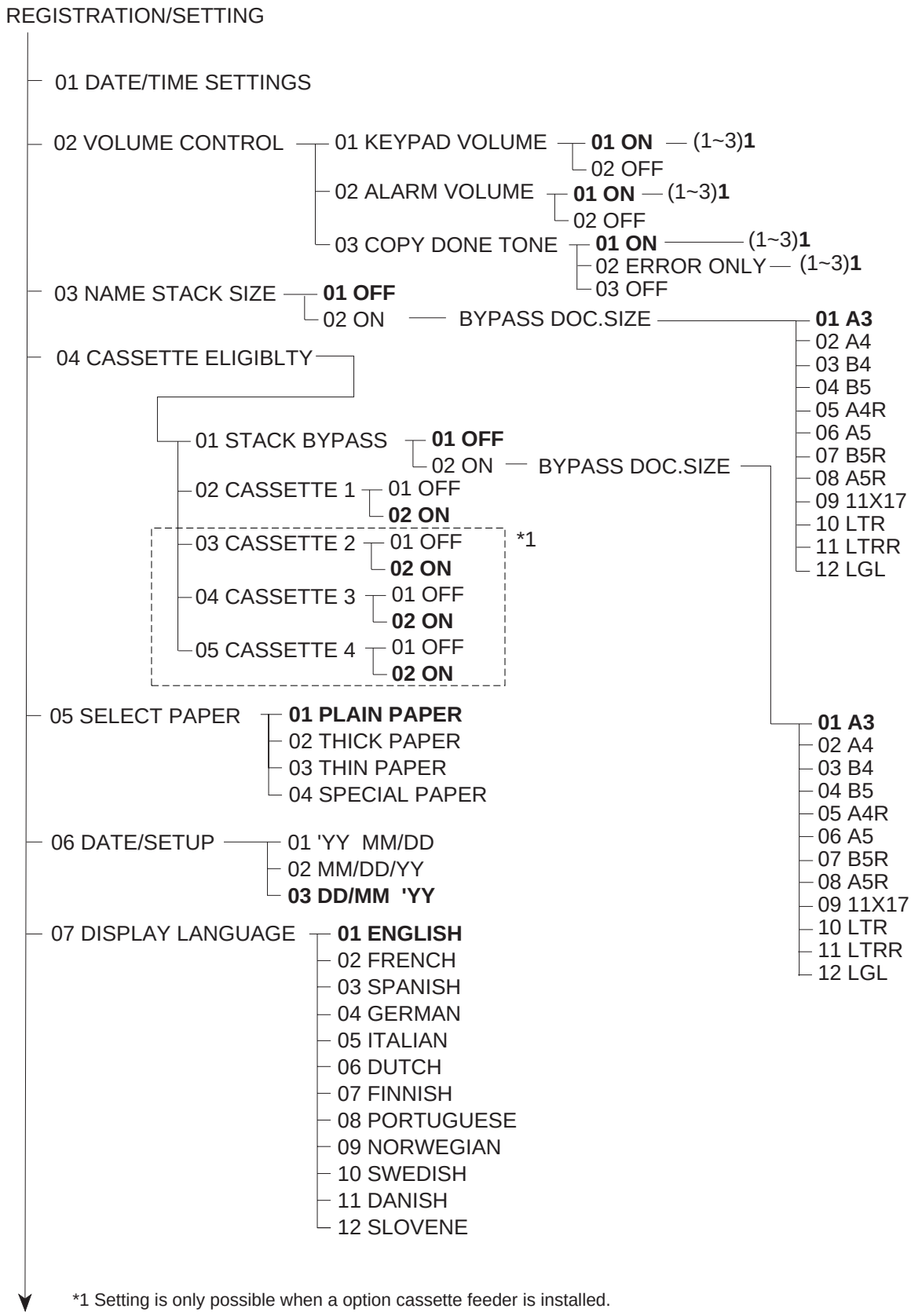


**Figure 1-419**


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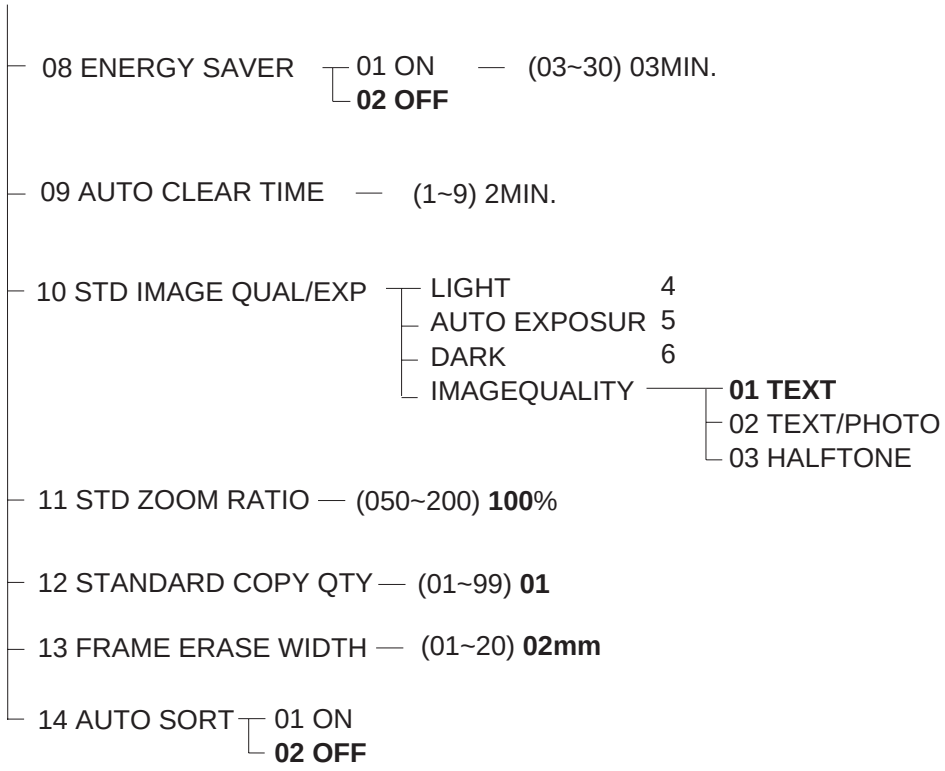


**Figure 1-420**

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# V. ROUTINE MAINTENANCE TO BE CARRIED OUT BY THE USER

Explain carefully to the user that the following part should be thoroughly cleaned once a week.

1) The copyboard glass should be wiped with a damp cloth and then wiped dry.
2) The copyboard cover and ADF document pressure plate should be wiped with neutral detergent and then wiped dry.

Explain carefully to the user that the following places should be cleaned thoroughly when the cartridge is exchanged.

1) Using the special tools provided, clean the separation static charge eliminator.
2) Clean away the paper dust from the area around the registration roller (refer to the diagram below).

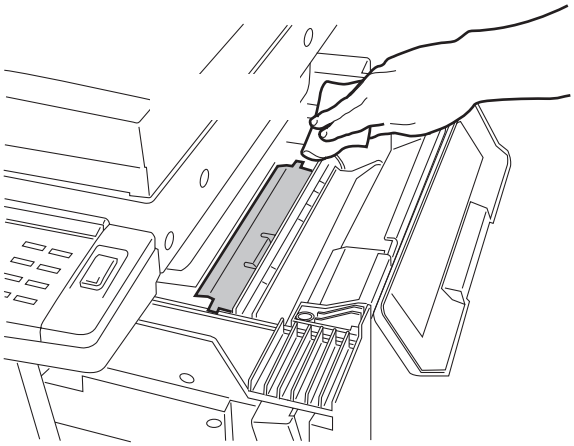

**Figure 1-501**


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# VI. SAFETY

## A. ⚠Laser beam safety

### 1. Laser beam safety

This unit has been approved as a Class 1 product based on the American DHHS (Department of Health and Human Services) Radiation Performance Standard which was enacted in 1968.

This means that the laser beam emitted from this unit is not harmful.

The laser scanning assembly of the unit is completely enclosed inside the protective housing and external covers, therefore there is no leakage of the laser beam from the unit during customer usage.

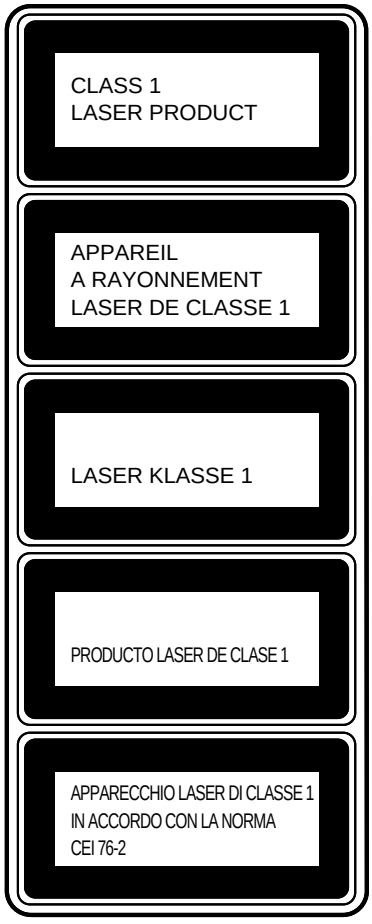


**Figure 1-601**



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## 2. CDRH Regulations

The American CDRH (Center for Device and Radiological Health), which belongs to the Food and Drug Administration, enforced regulations regarding laser products on August 2nd1976.

These regulation apply to all laser products manufactured after August 1st 1976. If product approval is not given, the product may not be sold in America.

The following label indicates that the product has been approved by the CDRH regulations. All products which are sold in the United States are obligated to have this label affixed.

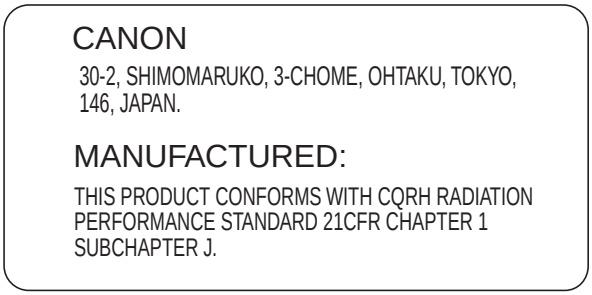


**Figure 1-602**

**Note:**
Part of this information may differ depending on the product model.


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### 3. Handling the laser unit

When servicing around the unit's scanning assembly, take particular care not to put highly reflective tools, such as drivers, etc., in the path of the laser beam.

Also, remove any rings when undertaking maintenance work. (There is a danger that the laser beam will be reflected into the eyes.)

This unit's laser beam is infrared. The label in the diagram below is found on covers which may reflect the laser beam.

Take special care when servicing inside this labeled cover.

This label is on the laser scanning assembly cover inside this unit. There is a danger of laser radiation leakage from inside this cover.

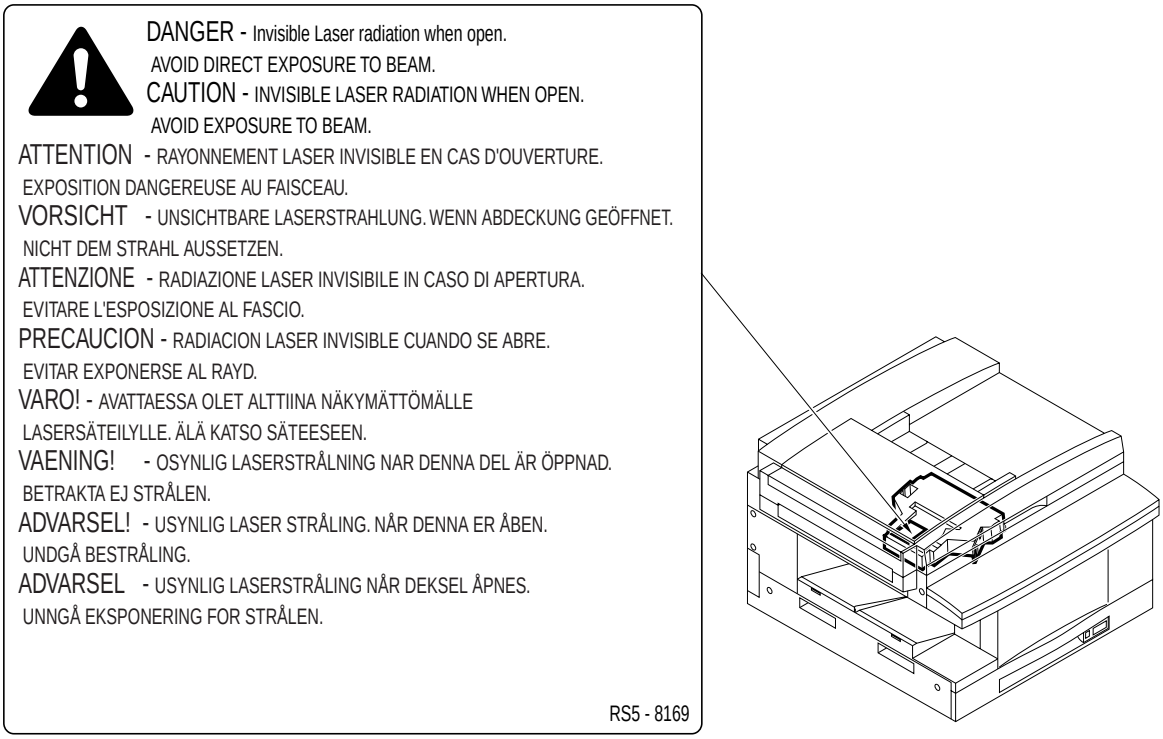
DANGER - Invisible Laser radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.
CAUTION - INVISIBLE LASER RADIATION WHEN OPEN.
AVOID EXPOSURE TO BEAM.
ATTENTION - RAYONNEMENT LASER INVISIBLE EN CAS D'OUVERTURE.
EXPOSITION DANGEREUSE AU FAISCEAU.
VORSICHT - UNSICHTBARE LASERSTRAHLUNG. WENN ABDECKUNG GEÖFFNET.
NICHT DEM STRAHL AUSSETZEN.
ATTENZIONE - RADIAZIONE LASER INVISIBILE IN CASO DI APERTURA.
EVITARE L'ESPOSIZIONE AL FASCIO.
PRECAUCION - RADIACION LASER INVISIBLE CUANDO SE ABRE.
EVITAR EXPONERSE AL RAYD.
VARO! - AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE
LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VAENING! - OSYNLIG LASERSTRÅLNING NAR DENNA DEL ÄR ÖPPNAD.
BETRAKTA EJ STRÅLEN.
ADVARSEL! - USYNLIG LASER STRÅLING. NÅR DENNA ER ÅBEN.
UNDGÅ BESTRÅLING.
ADVARSEL - USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES.
UNNGÅ EKSPONERING FOR STRÅLEN.
RS5 - 8169

**Figure 1-603**

The above diagram is equipped with an ADF unit.
The main units construction is the same for units whether equipped with the ADF units, or not.



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## B. Toner safety

The toner is a non-toxic substance composed of plastic, iron and a small amount of pigment.

If toner gets onto skin or clothes, wipe off as thoroughly as possible with a dry tissue, then wash. If warm water is used to clean, the toner gels and soaks permanently into clothing making it then impossible to clean away the stain. Also, this toner decomposes easily with vinyl material, therefore avoid contact.

**Caution:**

Never throw the toner into fire - there is a danger of explosion.


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# VII. COPYING PROCESS

## A. Outline

The construction of this unit, which employs the indirect method electro-static process, is shown in Figure 1-701.

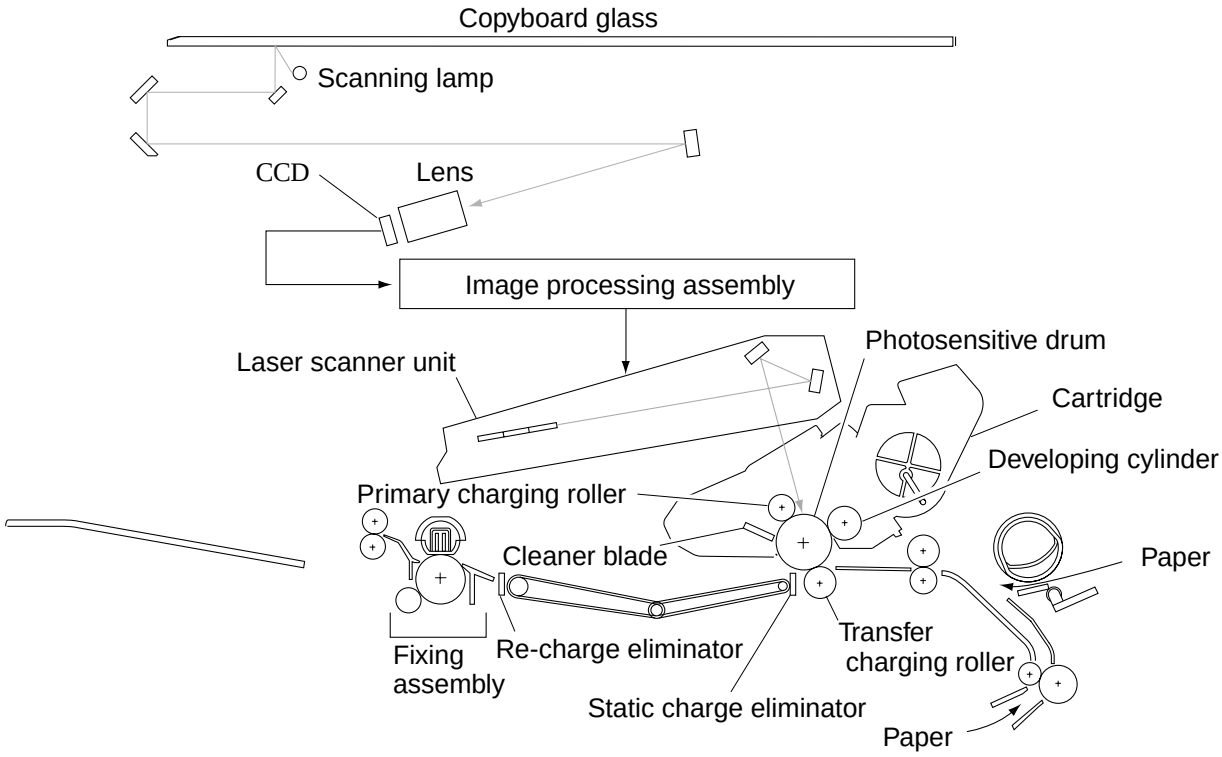


**Figure 1-701**

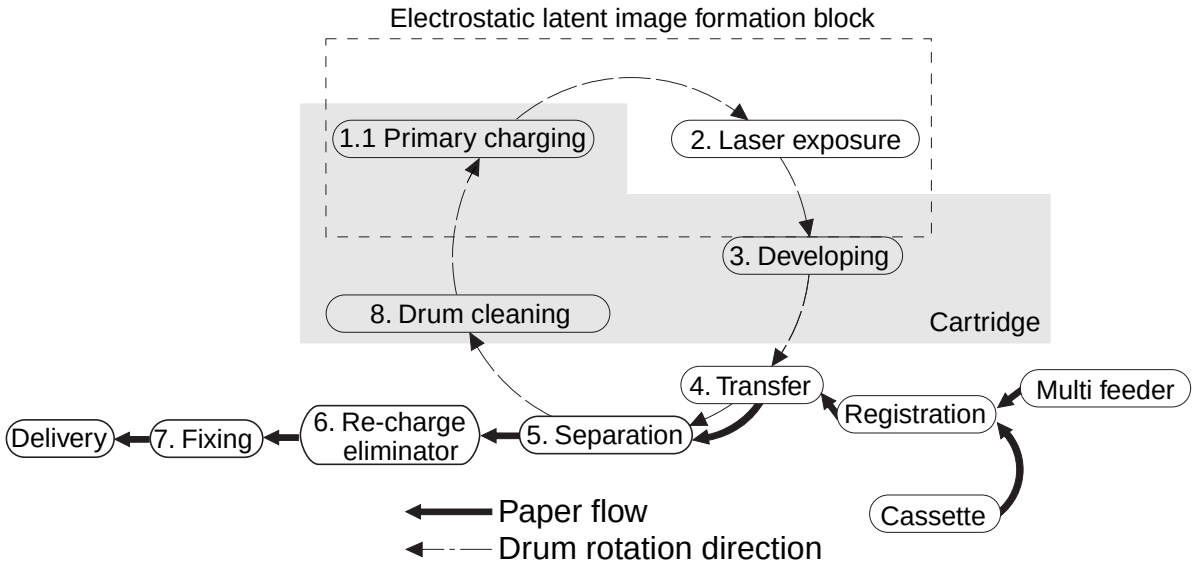


**Figure 1-702**

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In this unit, the main image formation components; drum, toner, primary charging, developing and drum cartridge are integrated in a cartridge system.

Furthermore, this unit employs the SURF fixing process; fluorocarbon coated film is heated and the paper is passed between pressure rollers, thus being fixed by heat and pressure.

This units image formation process is composed of the following steps.

Step 1 Primary charging (AC & negative DC)
Step 2 Laser emission
Step 3 Developing (AC & negative DC bias)
Step 4 Transfer (positive DC)
Step 5 Separation (negative DC)
Step 6 Re-charge eliminator (positive DC)
Step 7 Fixing
Step 8 Drum cleaning

**Reference:**

Regarding the Re-charge step

In the transfer charging step, the transfer toner image on the paper adheres due to a positive charge from the back of the paper. This charge is weakened by the separation step, therefore the toner would scatter if moved in this state to the fixing step. In order to prevent this, the Re-charge eliminator is located before the fixing step., and positive DC bias is applied to the back of the paper.

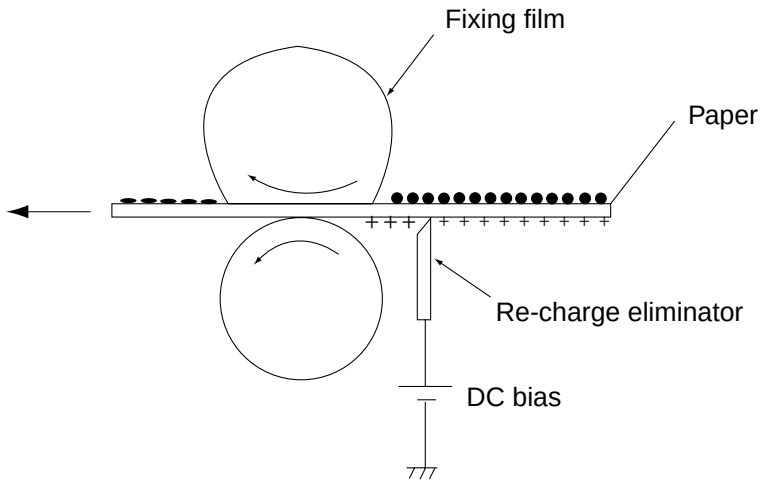


**Figure 1-703**


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# CHAPTER 2

# BASIC OPERATION

In this chapter the unit's basic operations, purposes and functions, as well as the relationship between the electrical and mechanical systems, are summarized. An overview of each part's operation timing is also included.


I. BASIC OPERATION .....2-1
A. Function configuration.....2-1
B. Copy operation overview .....2-2
II. ELECTRICAL CIRCUIT OVERVIEW.....2-3
III. BASIC SEQUENCES.....2-4
IV. MAIN MOTOR.....2-5
V. PRINCIPAL CIRCUIT PCB INPUT/OUTPUT.....2-6


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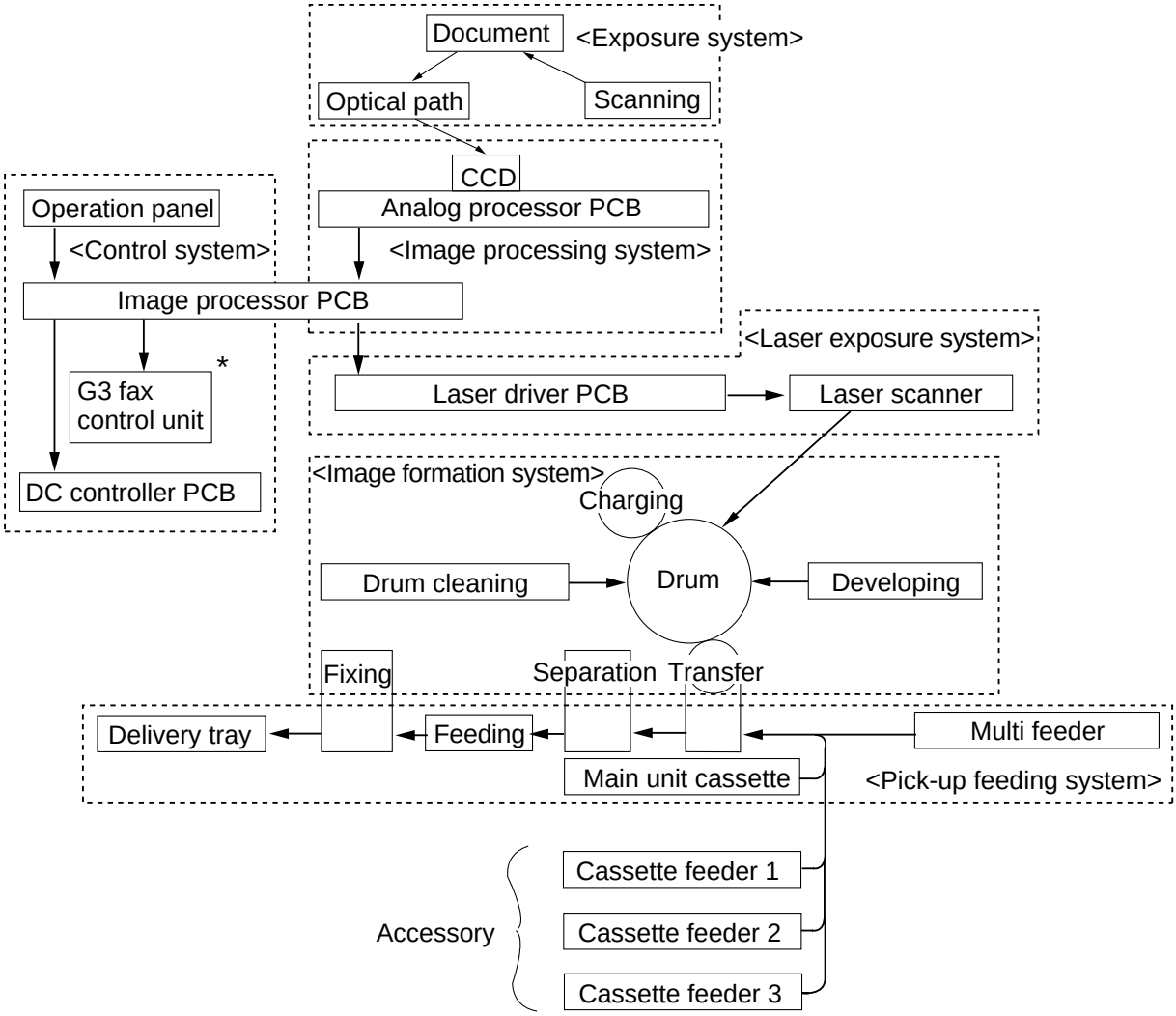
# I. BASIC OPERATION

## A. Function configuration

The functions of the unit can broadly be divided into 7 blocks; pick-up/ feeding system, document exposure system, image processing system, laser exposure system, image formation system, transmission system and the control system.




*: Only applicable for units equipped with a fax function.

**Figure 2-101**



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## B. Copy operation overview

This unit will, depending on the copy mode set by the customer, automatically operate in the direct copy mode or memory copy mode.

Memory copy: After storing all the image data read from one job in the image data housing memory DRAM (IC7, IC8, IC9, IC10) on the image processor PCB, the printing operation begins.

The operating conditions for the copy mode and memory copy mode are described below.

### Conditions for the different copying methods

| Document scanning mode | Copy mode | Number of copies | Copy method |
|---|---|---|---|
| Book mode*1 | No designation | 1 to 99 | Direct copy |
| Sheet mode | Sort mode | No designation | Memory copy |
| | For 2 in 1 mode | No designation | Memory copy |
| | Other than sort mode, 2 in 1 mode | 1 sheet | Direct copy |
| | | 2 sheets or more | Memory copy |
| No designation | Copy by multi-feeder pick-up | No designation | Memory copy |

*1 Book mode is when the document is set on the copyboard glass and then copied.
*2 Sheet mode is when the document is set in the ADF and then copied.

**Table 2-101**

**Reference:**

When copying using the multi-feeder pick-up, memory copying will take place no matter what conditions are in effect.


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# II. ELECTRICAL CIRCUIT OVERVIEW

The main electrical control of the unit is performed by the IC on the image processor PCB and the IC on the DC controller PCB.

Furthermore, the unit is equipped with 2 backup lithium batteries on the image processor PCB.

The function of each PCB is listed below.

- Image processor PCB

| IC No. | Function overview |
|---|---|
| IC26 (CPU) | • Sequence control<br>• Serial I/F control<br>• Timer control<br>• Interrupt control |
| IC15 | • DRAM control<br>• Control panel and transmission control<br>• DMA control<br>• DC controller PCB and transmission control<br>• ADF motor control |
| IC28 | • Control panel display control |
| IC29 | • Image processing control (shading control)<br>• Analogue processor PCB transmission control |
| IC38 | • Image processing control (half tone processing, binarisation processing) |
| IC41 | • Image reduction and enlargement |
| ICI, IC2 (on ROM DIMM) | • Control program built-in flash ROM) |
| IC7, IC8, IC9, IC10 | • Image data storage DRAM |
| IC36, IC37 | • Storage SRAM for service mode, user mode, and other parameters |

**Table 2-201**

- DC controller PCB

| IC No. | Function overview |
|---|---|
| IC301 (CPU) | • Print operation program built-in<br>• Print process control<br>• Motor, clutch sensor, etc., load control<br>• High voltage output control<br>• Cassette feeder operation control<br>• Jam detection<br>• Laser scanner drive control |

**Table 2-202**

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# III. BASIC SEQUENCES

General timing chart

• Conditions: Copy / A4 paper / main unit cassette pick-up / 3 sheets

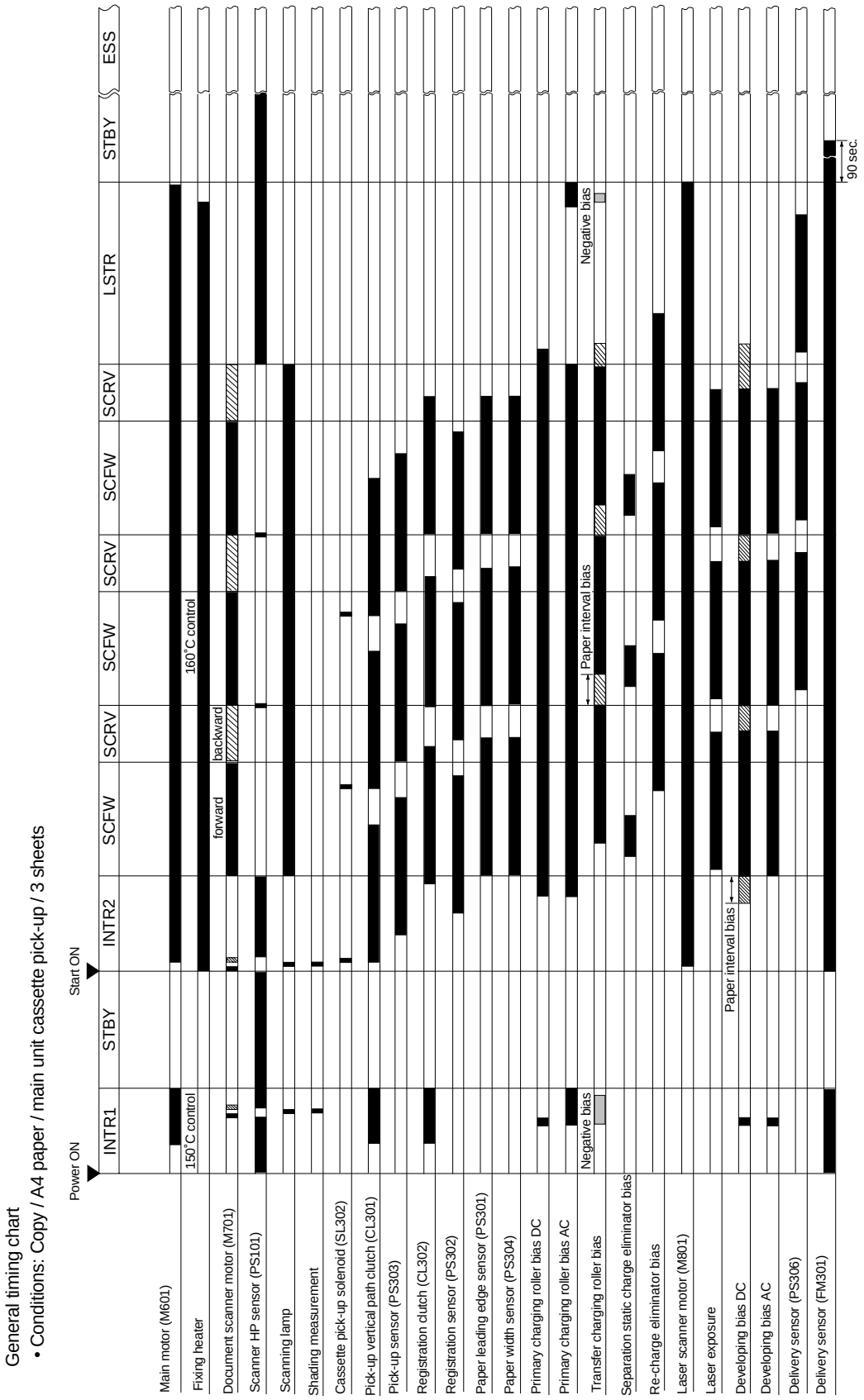


**Figure 2-301**


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# IV. MAIN MOTOR

## 1. Overview

The rotation and stopping of the main motor (M601) is controlled by the drive signal output from DC controller PCB.

The DC controller PCB changes the speed in accordance with the print resolution.

## 2. Rotation operation

The unit's main motor has a Hall element built-in 3 phase DC brushless motor, and is integrated with the motor drive circuit.

When the main motor drive signal (MMD*) from the DC controller PCB is "0", the main motor begins to rotate, and when it reaches the designated rotation, the main motor ready signal (MRDY*) signal changes to "0".

The DC controller PCB's CPU (IC301) judges that there is a motor malfunction when the following situations occur, and displays the error code "##325".

1) When the MRDY* does not change to "0" 100ms after the main motor's drive has started.
2) When the MRDY* signal has changed to "0", but does not revert to "1" after 0.1s of continuous rotation.

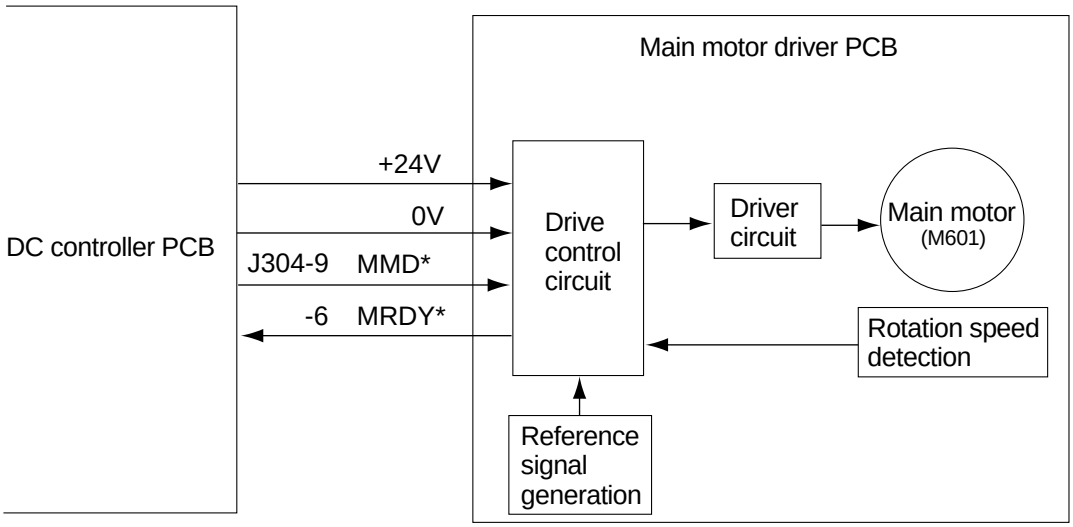


**Figure 2-401**

**Related error code**
###325: Main motor / exhaust fan malfunction

**Related service mode**
The print status is displayed by pressing TEST>6:FACULTY TEST>6-3:SENSOR> on the input numeric key 7. Check the condition of the main motor malfunction using the status 35 feeding unit malfunction detailed status Bit 6.

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# V. PRINCIPAL CIRCUIT PCB INPUT / OUTPUT

### Image processor PCB input / output (1/2)

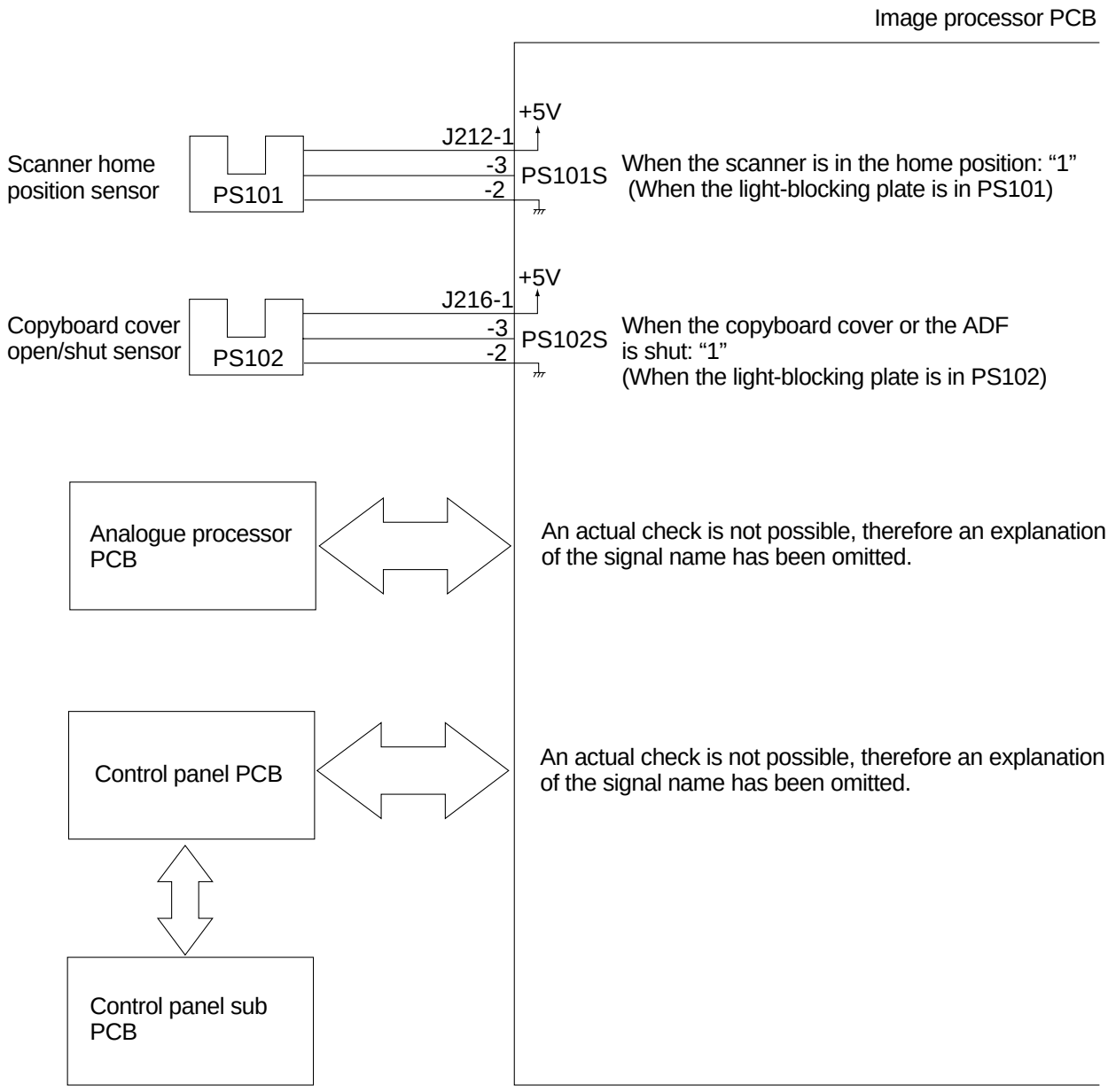
Image processor PCB
+5V
J212-1
-3
-2
PS101S
Scanner home position sensor
PS101
When the scanner is in the home position: "1"
(When the light-blocking plate is in PS101)
+5V
J216-1
-3
-2
PS102S
Copyboard cover open/shut sensor
PS102
When the copyboard cover or the ADF is shut: "1"
(When the light-blocking plate is in PS102)
Analogue processor PCB
An actual check is not possible, therefore an explanation of the signal name has been omitted.
Control panel PCB
An actual check is not possible, therefore an explanation of the signal name has been omitted.
Control panel sub PCB

**Figure 2-501**


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## Image processor PCB input / output (2/2)

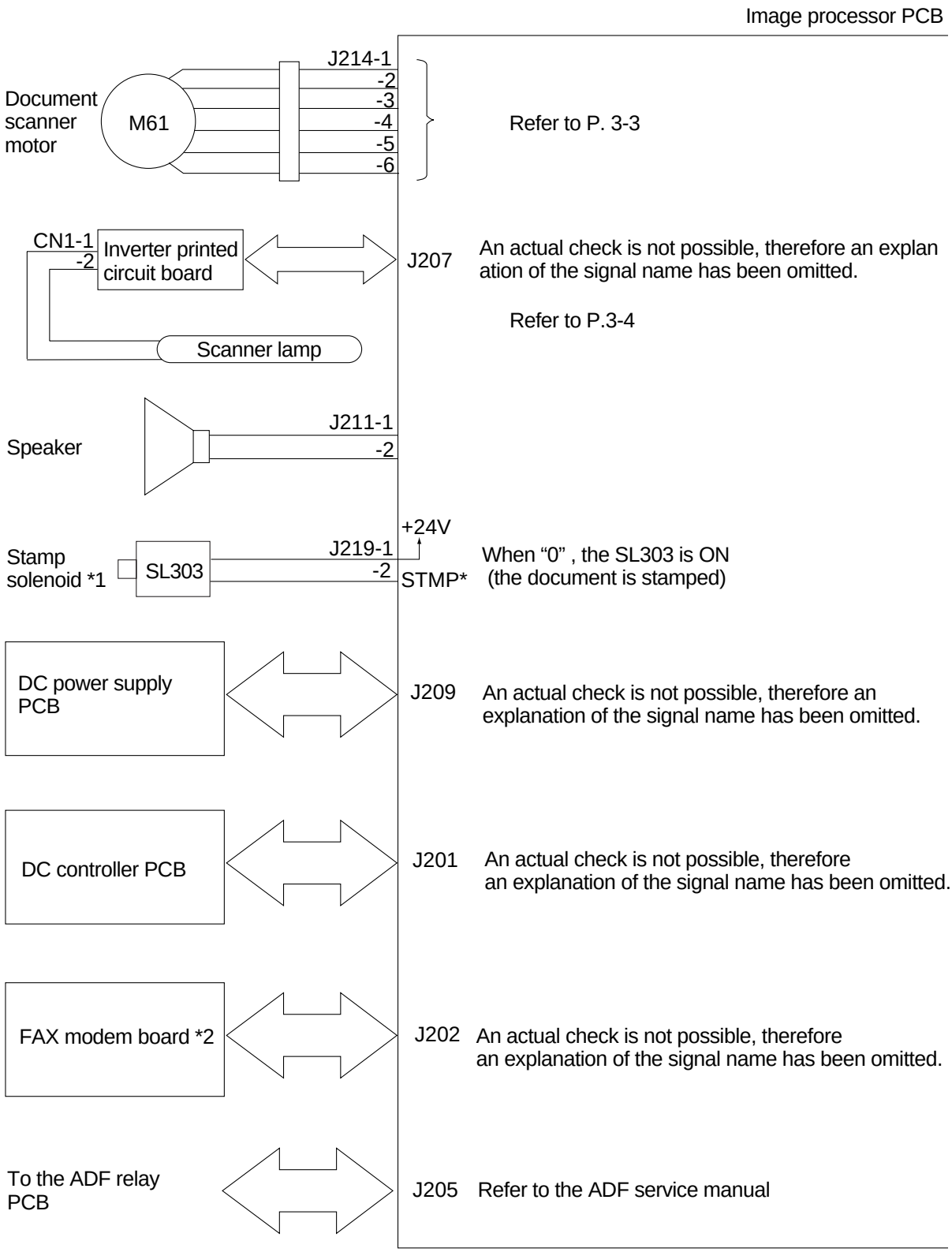


**Figure 2-502**

*1 This function only applies to units equipped with the ADF.
*2 Is only installed if the unit is equipped with a FAX function.

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## DC controller PCB input / output (1/3)

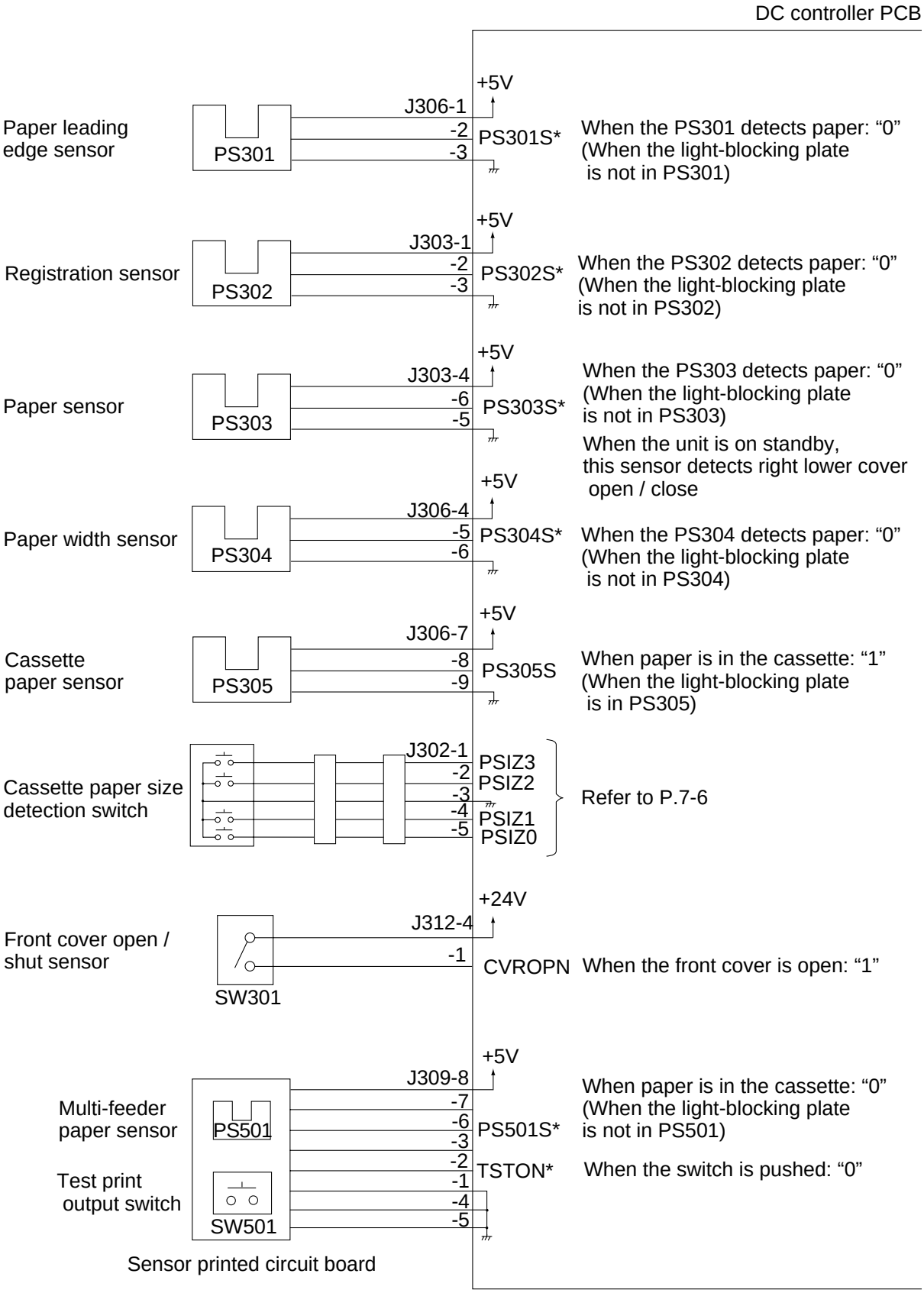


**Figure 2-503**


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## DC controller PCB input / output (2/3)

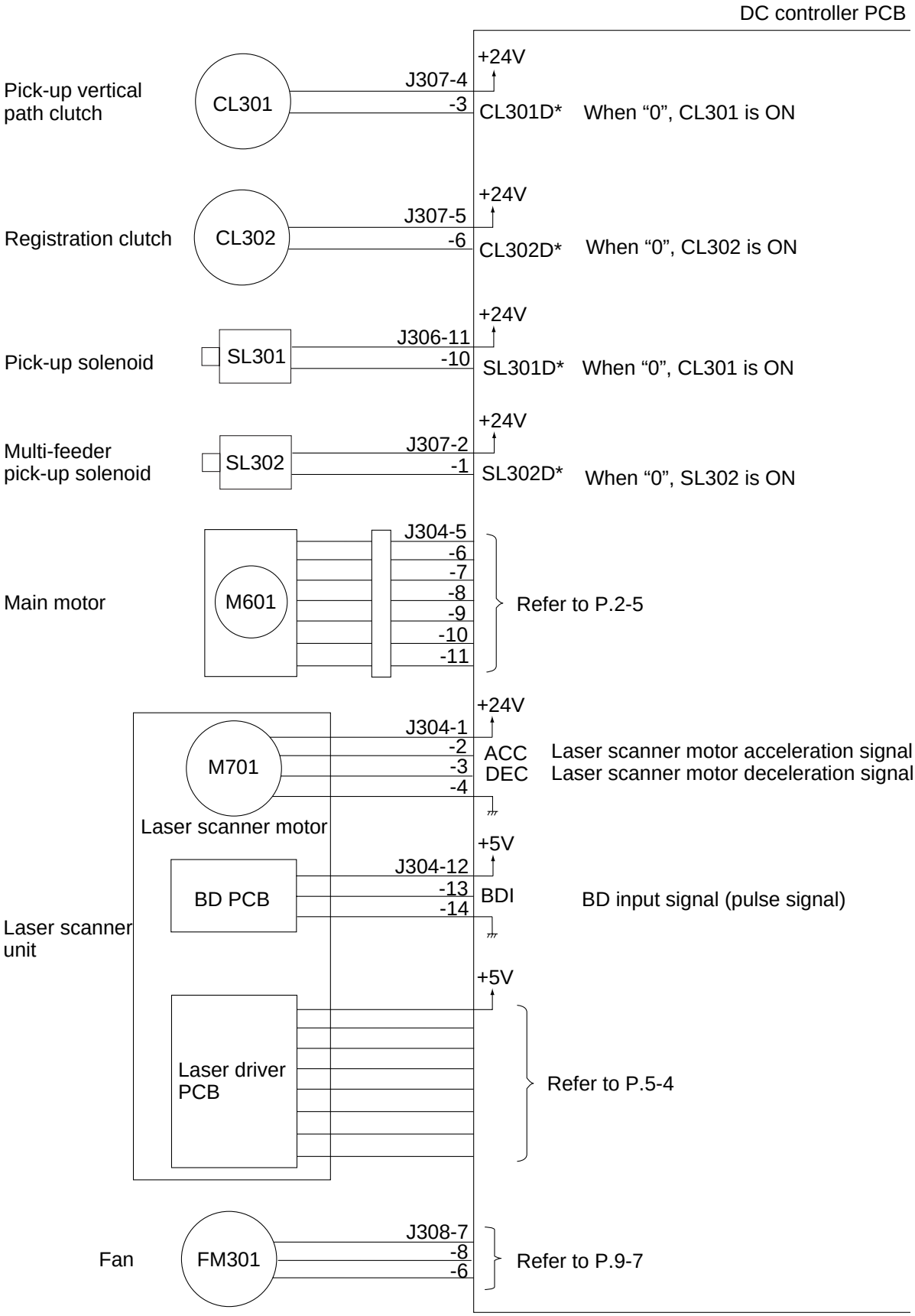


**Figure 2-504**

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## DC controller PCB input / output (3/3)

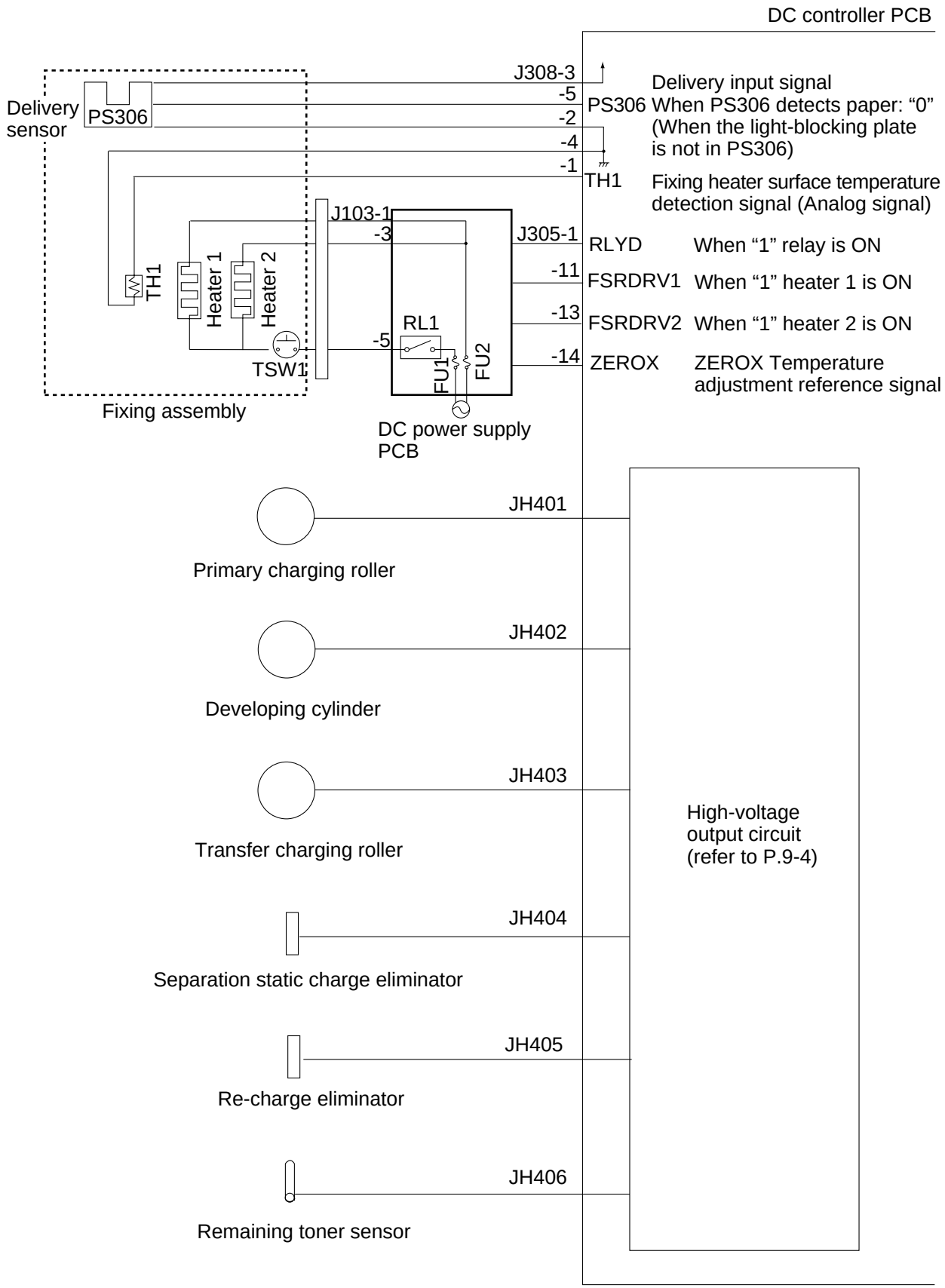


**Figure 2-505**


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# CHAPTER 3

# EXPOSURE SYSTEM

In this chapter the purpose and functions of the unit's scanner system drive and document sensors, etc. as well as the relationship between the electrical and mechanical systems is summarized. An overview of each parts operation timing is also included.


I. OPERATION OVERVIEW.....3-1
A. Overview.....3-1
B. Exposure system sequence.....3-2
II. SCANNER DRIVE SYSTEM.....3-3
A. Document scanner motor.....3-3
B. Charging the magnification ratio.....3-4
C. Scanning lamp control.....3-4
III. DISASSEMBLY, ASSEMBLY.....3-5
A. Scanning lamp.....3-6
B. Document scanning motor.....3-8


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# I. OPERATION OVERVIEW

## A. Overview

The image exposure system's function is to expose the document, and irradiate the CCD with the reflected light.

The scanning lamp irradiates the document and the light from this is reflected by 4 mirrors, converged by a lens and then transmitted to the CCD. The reflected light in the CCD is then image processed with a scanning resolution of 400 × 600pdi.

Figure 3-101 is a cross sectioned diagram of the image exposure system, and Figure 3-102 is an external view diagram.

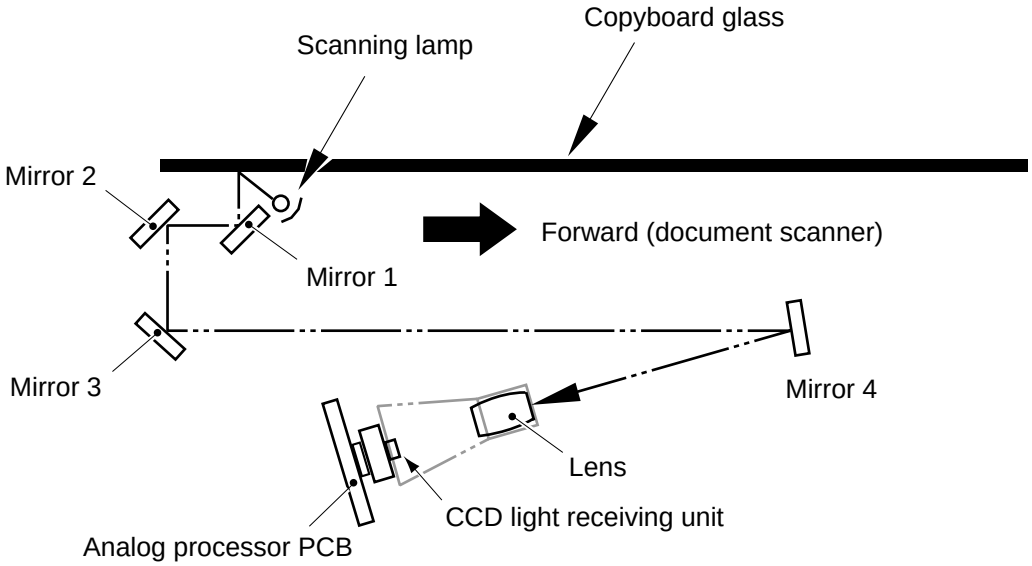


**Figure 3-101**

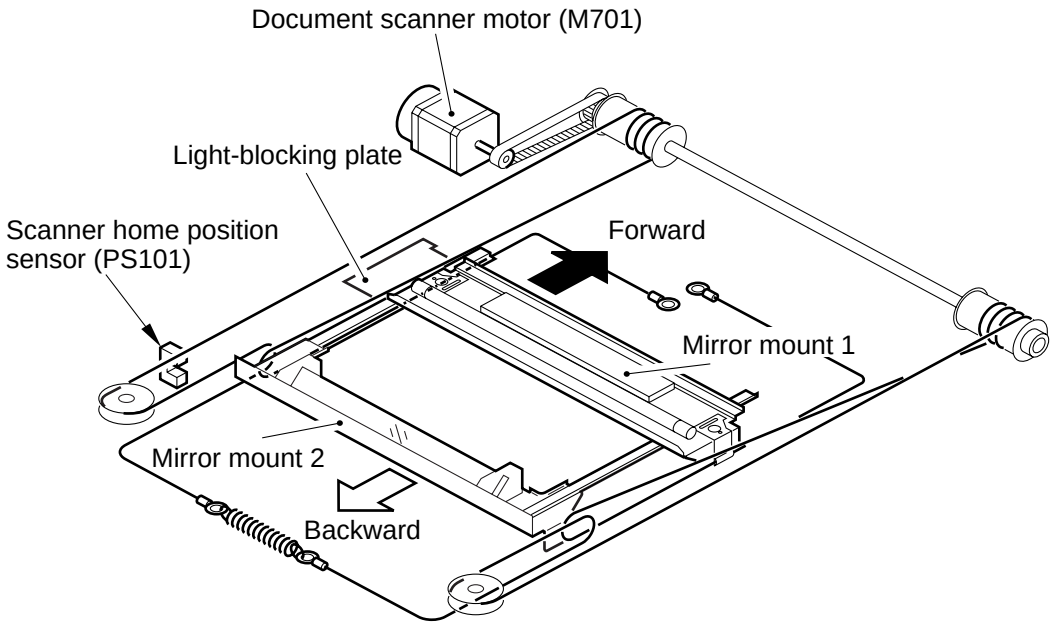


**Figure 3-102**



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## B. Exposure system sequence

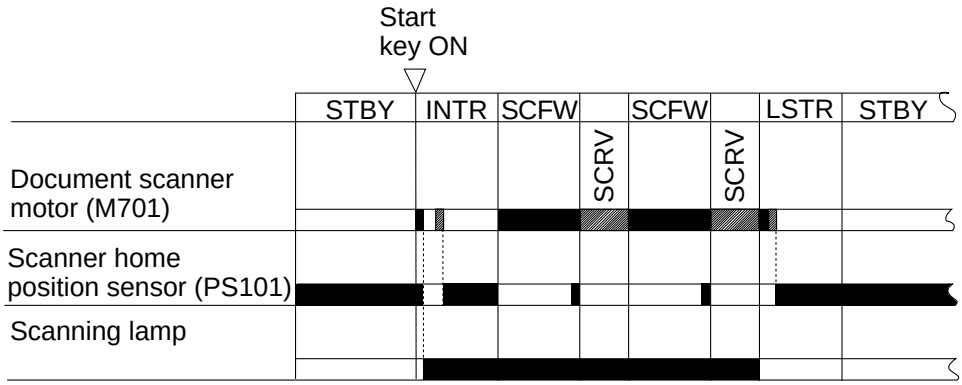


**Figure 3-103**


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# II. SCANNER DRIVE SYSTEM

## A. Document scanner motor

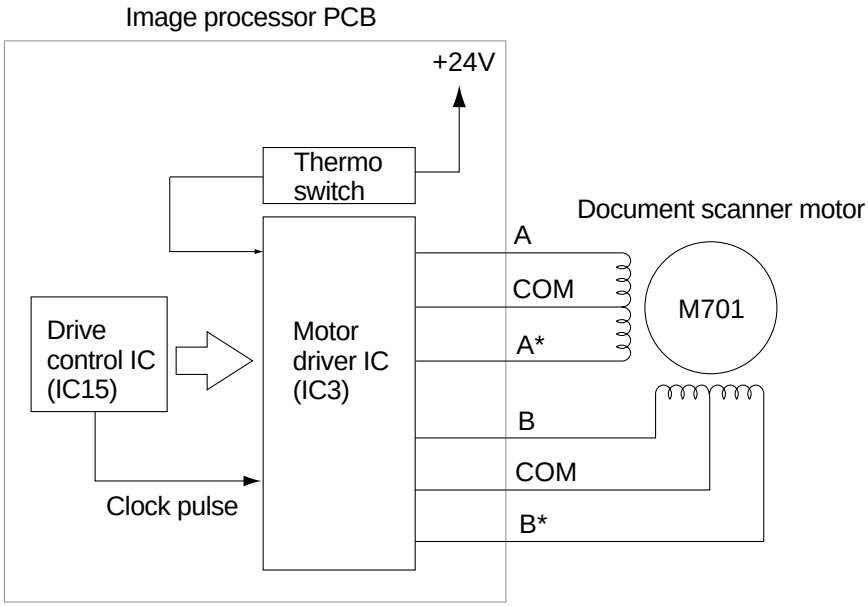
The document scanner motor (M701) uses a 2 phase excitation stepping motor which is controlled by the image processor PCB.

The image processor's PCB drive control IC (IC15) sends instructions for the clockwise rotation (scanner forward movement), anti-clockwise rotation (scanner backward movement) and the rotation speed to the motor driver IC (IC3). The motor driver IC (IC3) supplies power to the document scanner in compliance with the clock signal which is sent with this control instruction.

**Reference:**

In the event of a failure such as a blown fuse in the document scanner motor, 24 V continues to be supplied to the motor driver's IC (IC3) which causes the IC's surface temperature to increase. Consequently, a thermoswitch has been installed in the motor driver IC (IC3) for its protection. When the IC surface temperature reaches 115 ± 5°C the thermoswitch's contact is released, cutting off the 24V power supply to the motor driver IC (IC3).

If it is not possible to replace this thermoswitch, or if the switch has tripped because the temperature does not return to normal, eliminate the cause of the temperature increase, and then replace the image processor PCB.




**Related service mode**
By setting service mode>#10 CS SET>, the Mirror 1 mount will be moved to the factory setting position.

**Figure 3-201**



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## B. Changing the magnification ratio

The magnification ratio in horizontal scanning direction (drum axis direction) is changed by line skipping (for reducing) when writing the image signal to the line memory, or double scanning (for enlarging) when reading out from the line memory.

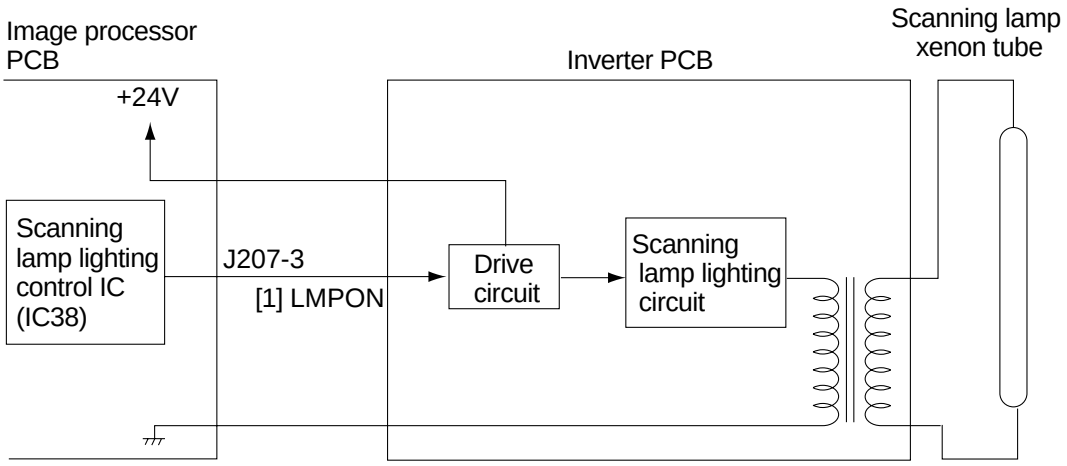
The magnification ratio in the vertical scanning direction is changed by increasing the speed of the mirror mounts movement (when reducing), or reducing the movement speed (when enlarging).

## C. Scanning lamp control

This unit's scanning lamp uses a xenon tube.

The ON/OFF control of the scanning lamp is performed by the scanning lamp lighting control IC (IC38) which is on the image processor PCB.

Based on the scanning lamps drive signal (LMPON), which is output from the scanning lamp lighting control IC (IC38), the inverter PCB drive circuit comes into operation, causing 24V to be supplied to the scanning lamp via the scanning lamp lighting circuit.




[1] LMPON: Scanning lamp drive signal

**Related service mode**
Service mode>TEST MODE>5:AGING TEST (Number Key 5)
Scanning lamp lighting, ADF motor operation, oblique line pattern print

**Figure 3-202**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# III. DISASSEMBLY, ASSEMBLY

This chapter describes mechanical features and operations as well as disassembly and assembly procedures.

The following precautions must be observed during disassembly and assembly work.

1. ⚠ For the sake of safety, disconnect the power plug before performing any disassembly or assembly work.
2. Unless otherwise specified, assembly work is performed in the reverse order of the disassembly operations.
3. Be sure to use the right type (diameter and length) or screws in the right places.
4. An inner-clip washer is used with one securing screw in the metal cover to prevent buildup of static electricity. Make sure to use this washer during assembly work.
5. In principal, the copier must not be operated when parts have been removed.
6. ⚠ Do not throw the drum cartridge into fire - there is a danger of explosion.
7. In order to discharge any static electricity, touch the main unit's metal assembly before embarking on any work relating to the PCB. This will protect the PCB from any electrostatic damage.
8. When disassembling, do not remove screws which have been paint-locked.

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## A. Scanning lamp

1) Remove the ADF or pressure plate (Refer to P.3-1 of the ADF service manual).

2) Remove the 2 installation screws, and then remove the copyboard glass stay.

3) Remove the copyboard glass.

4) Remove 2 of each of the installation screws, then remove the upper rear cover [1] and the upper front cover [2].

5) Slowly move the Mirror 1 mount assembly from the home position about 10cm to the right.

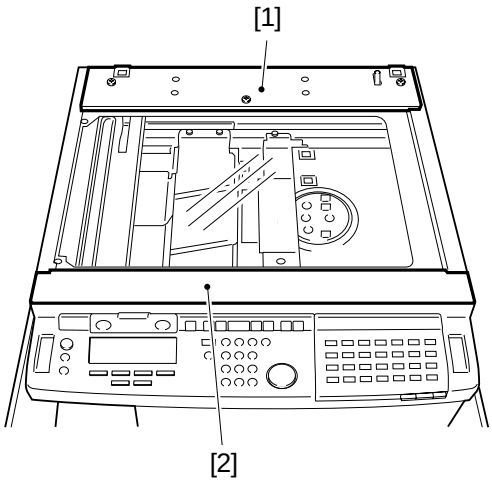


**Figure 3-301**

6) Remove the installation screw [3], and then remove the inverter PCB cover [4]

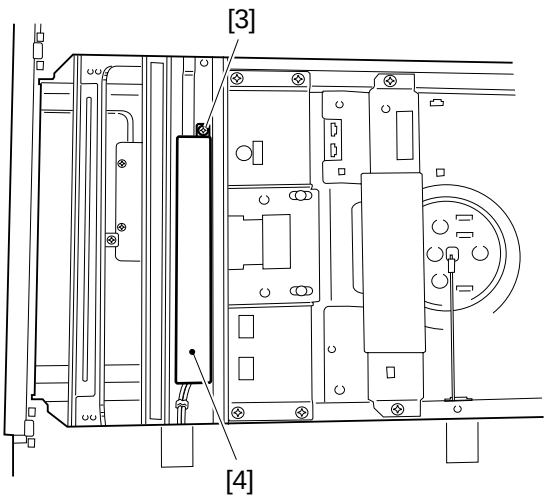


**Figure 3-302**


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7) Remove one of the inverter PCB's [5] connectors (CN2) [6].

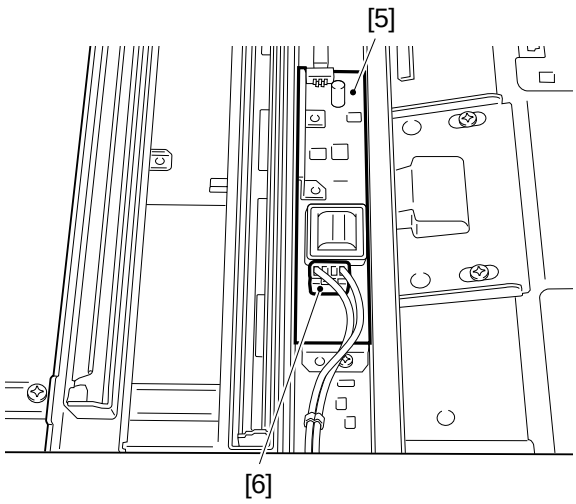


**Figure 3-303**

8) Insert a screwdriver into the upper frame metal sheet's front and back holes, and prise loose the 2 installation pins.

9) Removed a scanning lamp at slide.

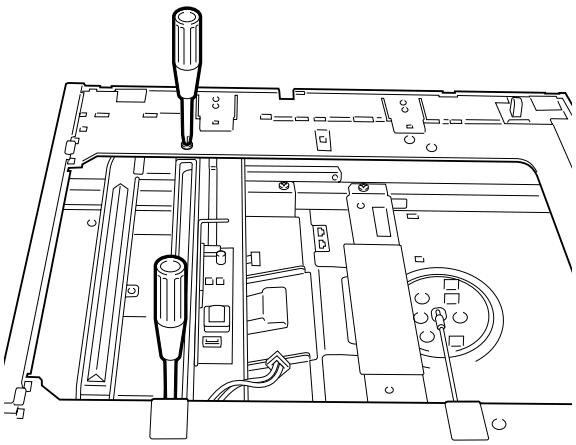

**Figure 3-304**

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## B. Document scanning motor

1) Remove the 4 installation screws and remove the main unit's rear cover.

2) Remove the copyboard cover open / shut sensor's connector [1]

3) Remove the installation screw [2], and remove the copyboard cover open / shut sensor together with the sensor holder.

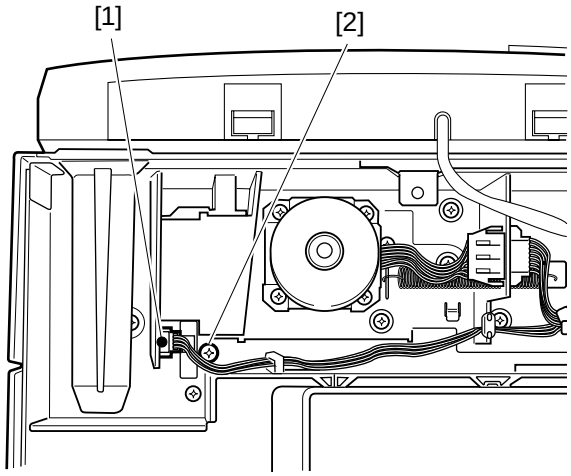


**Figure 3-305**

The above diagram shows the configuration of units equipped with an ADF. The configuration of the main unit is also the same for units which are not equipped with an ADF.

4) Remove the document scanner motor's [3] connector [4].

5) Remove the 4 installation screws [5].

6) Remove the tension spring [6], and while removing the drive belt from the motor gear, remove the document scanner motor together with the support plate.

**Caution:**

When installing the document scanner motor, lock in position with a installation screw after pulling the tension spring between the motor and the main unit. If the spring is locked in position before it has been stretched, the drive belt will not have the correct tension which could lead to faulty operation of the scanner.

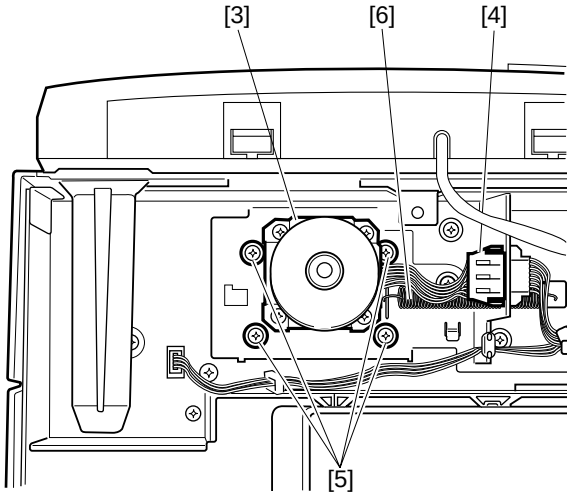


**Figure 3-306**

The above diagram shows the configuration of units equipped with an ADF. The configuration of the main unit is also the same for units which are not equipped with an ADF.


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# CHAPTER 4

# IMAGE PROCESSING SYSTEM

In this chapter the unit's CCD/Analog processor PCB, analog image processing and digital image processing are summarized.


I. OVERVIEW .....4-1
II. ANALOG IMAGE PROCESSING .....4-2
  A. Overview .....4-2
  B. CCD/CCD drive circuit .....4-2
  C. A-D conversion circuit / ABC circuit .....4-3
III. DIGITAL IMAGE PROCESSING .....4-4
  A. Overview .....4-4
  B. Shading correction .....4-5
  C. Magnification ratio process .....4-7
  D. Edge emphasis / smoothing process .....4-7
  E. Logarithmic correction .....4-8
  F. Half tone density processing .....4-9
  G. Binarisation .....4-9
IV. DISASSEMBLY, ASSEMBLY .....4-10
  A. CCD unit .....4-11


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# I. OVERVIEW

The image processing system changes the optical image, which has been irradiated onto the CCD, into an electrical signal (image signal), and then corrects and processes it.

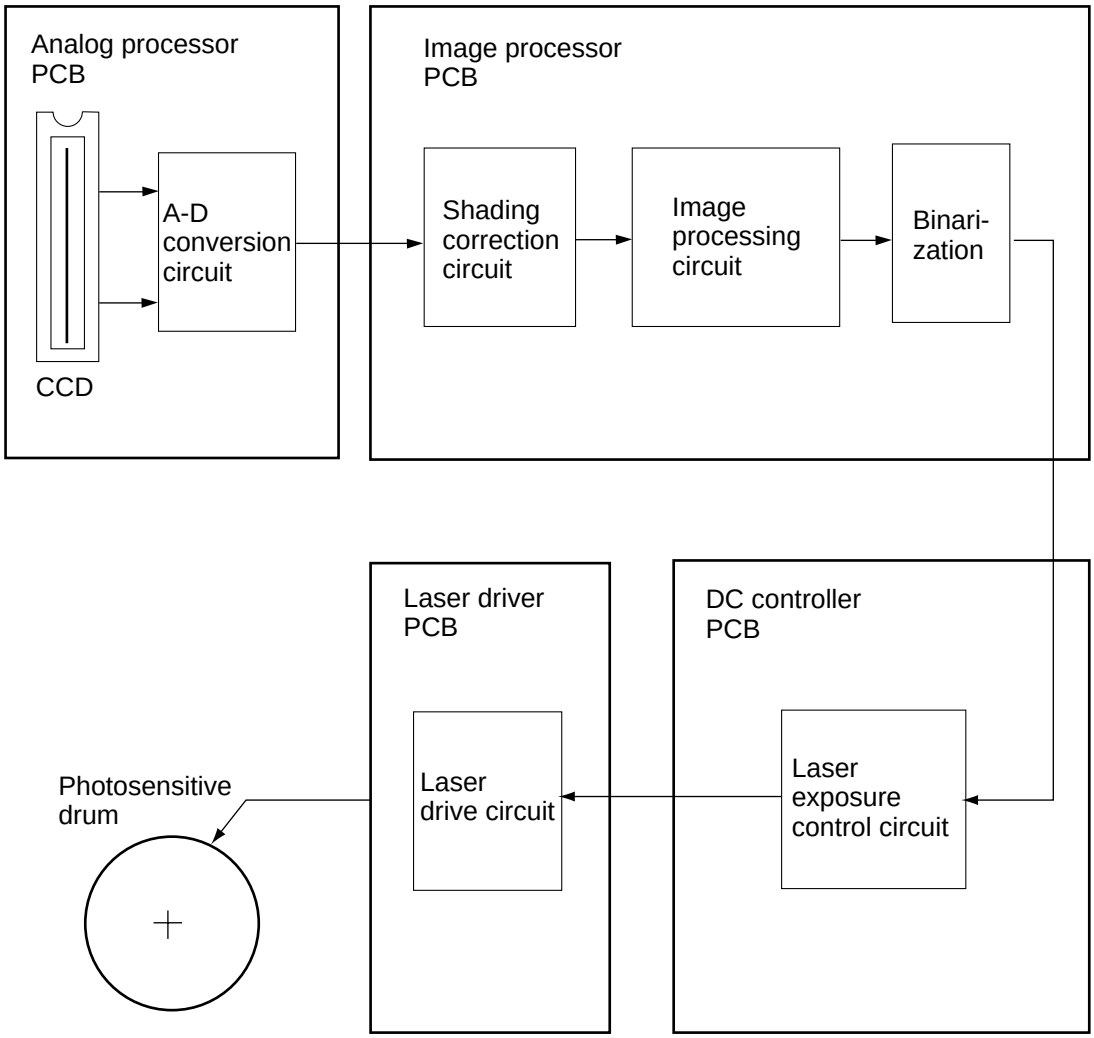


**Figure 4-101**



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# II. ANALOG IMAGE PROCESSING

## A. Overview

The analog processor PCB converts the CCD drive control and CCD output signals (analog signals) into digital signals. It also controls the AE.

## B. CCD/CCD drive circuit

The CCD is a linear image sensor with 5000 pixel per line (light receiving unit). The signal which has undergone photoelectric conversion at the light receiving unit is output separately as even number pixels and odd number pixels, and is transmitted to the CCD drive circuit. The CCD drive circuit then synthesizes the separately output odd number and even number pixel signals, and outputs the synthesized signal to the A-D conversion circuit.

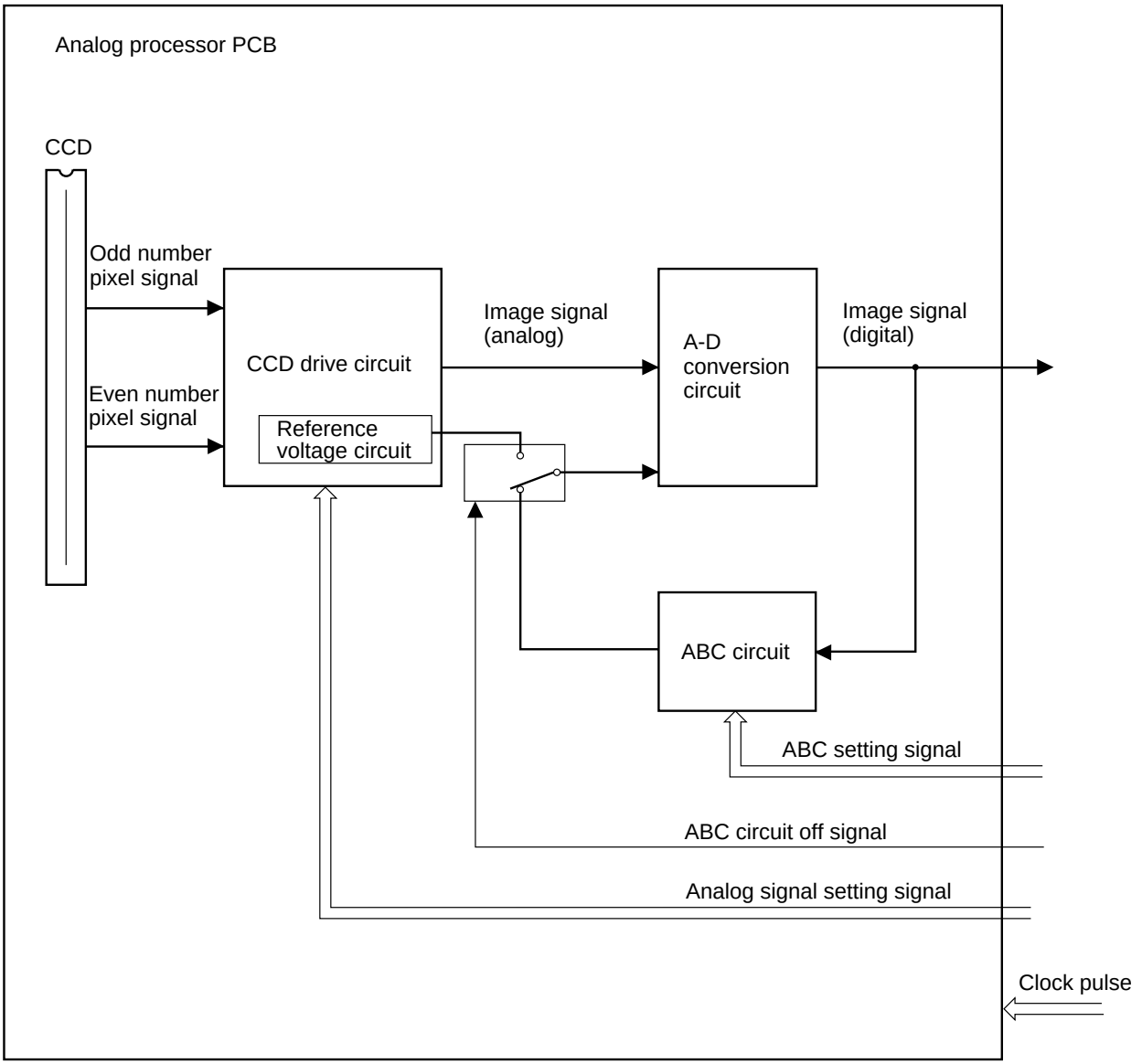


**Figure 4-201**


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## C. A-D conversion circuit / ABC circuit

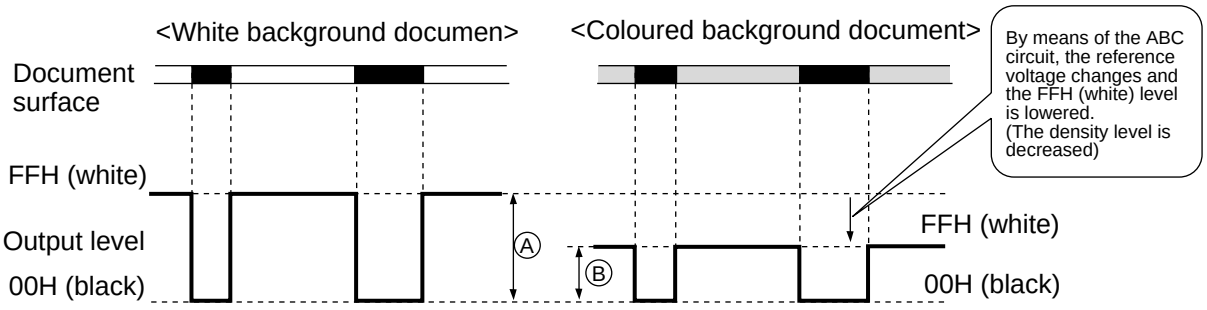
The CCD's PCB A-D conversion circuit converts the analog image signal (voltage signal), which has been sent from the CCD, into an 8 bit digital image signal.

The A-D conversion circuit performs A-D conversion processing based on the reference voltage. By increasing or decreasing the reference voltage, the density range (the difference between the max. output level and min. output level) of each pixel will also increase or decrease, therefore it has an affect on the signal level after the A-D conversion.

The ABC (Auto Background Control) function applies this characteristic, and changes the reference voltage in accordance with the output signal from the A-D conversion circuit, and by altering the density range, converts the documents background density. This technique is used for adjusting the density when copying from a coloured background document to one with a white background.

As show in figure 4-202, in the case of a document with a coloured background, by lowering the density range compared to a white background, the coloured background is erased.

When the unit's copy function density adjustment is set at "Auto", the ABC function comes into operation automatically. After A-D conversion, the image signal is returned by the ABC circuit, and judgement of the A-D conversion circuit output signal level takes place, the reference voltage is converted in accordance with the judgement results. ABC control takes place by the voltage being input into the A-D conversion circuit,.




(A) : White background document density range
(B) : Coloured background document density range

**Figure 4-202**



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# III. DIGITAL IMAGE PROCESSING

## A. Overview

The digital image processing assembly processes the image signals sent from the Analog processor PCB.

The following block figure shows the contents of the image processing.

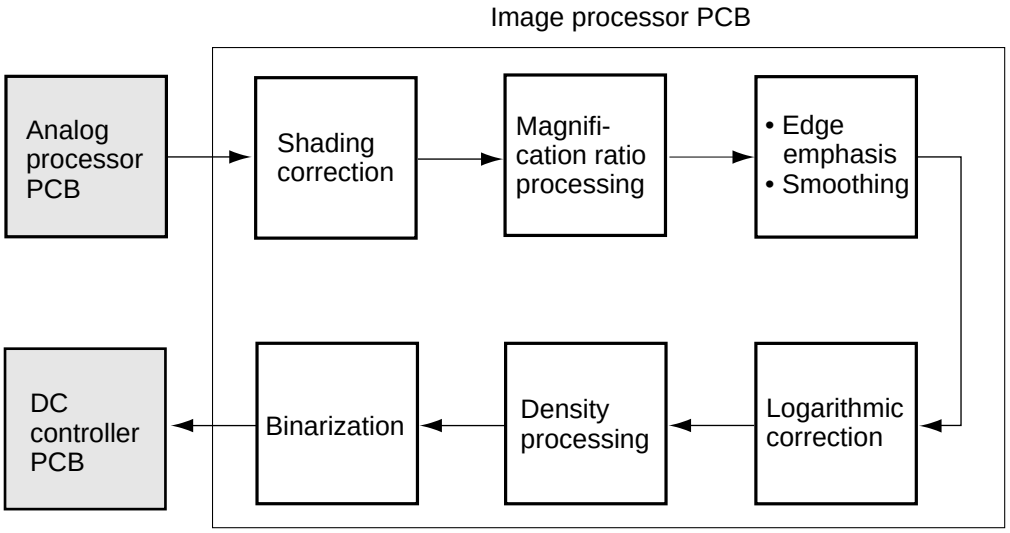


**Figure 4-301**


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## B. Shading correction

Even when reflected light from a document with even density is detected by the CCD, the CCD output will not be consistent for the following reasons.

Reason 1: There is variation in the photosensitivity of the individual CCD pixels.
Reason 2: The volume of light filtered through the lens center and the peripheral areas is different.
Reason 3: The volume of light from the scanning lamp centre and ends is different.
Reason 4: The scanning lamp's quality gradually deteriorates. Shading is performed in order to correct the above.

There are two types of shading correction; shading correction for every copy and the automatic shading (the value of which is set in the service mode).

a. Shading target value setting

The automatic shading correction is operated and executed by TEST MODE 2:CCD in the service mode.

This operation measures and records the density of the white reference plate (behind the copyboard glass). The memorized data are arithmetically processed and used as the 'target value' when correcting the shading.

b. Shading correction

In this operation, the scanning lamp light irradiates the white reference plate, (refer to Figure 4-302) and the volume of that reflected light is digitized by the analog image processing assembly. The digitized reflected light volume is input as shading data into the image processor PCB's shading circuit.

The memorized target value and the shading data are arithmetically processed. The result is then set as the shading correction value.

The shading correction value corrects the unevenness in the CCD's pixels at the time of document scanning, and is used to create image density uniformity.

Shading correction takes place at the following times:

- When the power is switched ON.
- When the number of pages in a document is between 1 and 19, shading correction occurs before the first page is scanned.
- When performing continuous copying (copying 20 pages or more), shading correction takes place before the first page is scanned and then once every 20 pages (after the previous shading correction has taken place, it will take place again after scanning the 20$^{th}$ page).
- For Fax transmissions, shading correction takes place before scanning the first page. (Shading correction only takes place once regardless of the number of pages).

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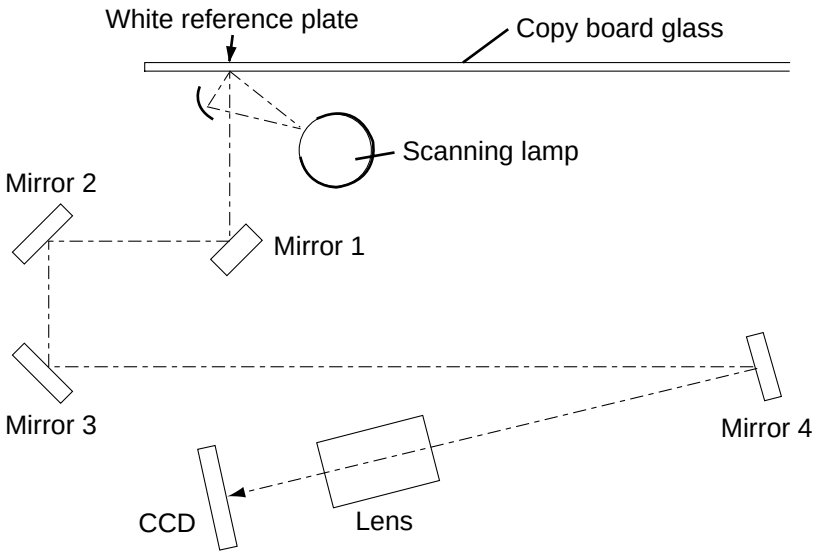


**Figure 4-302**

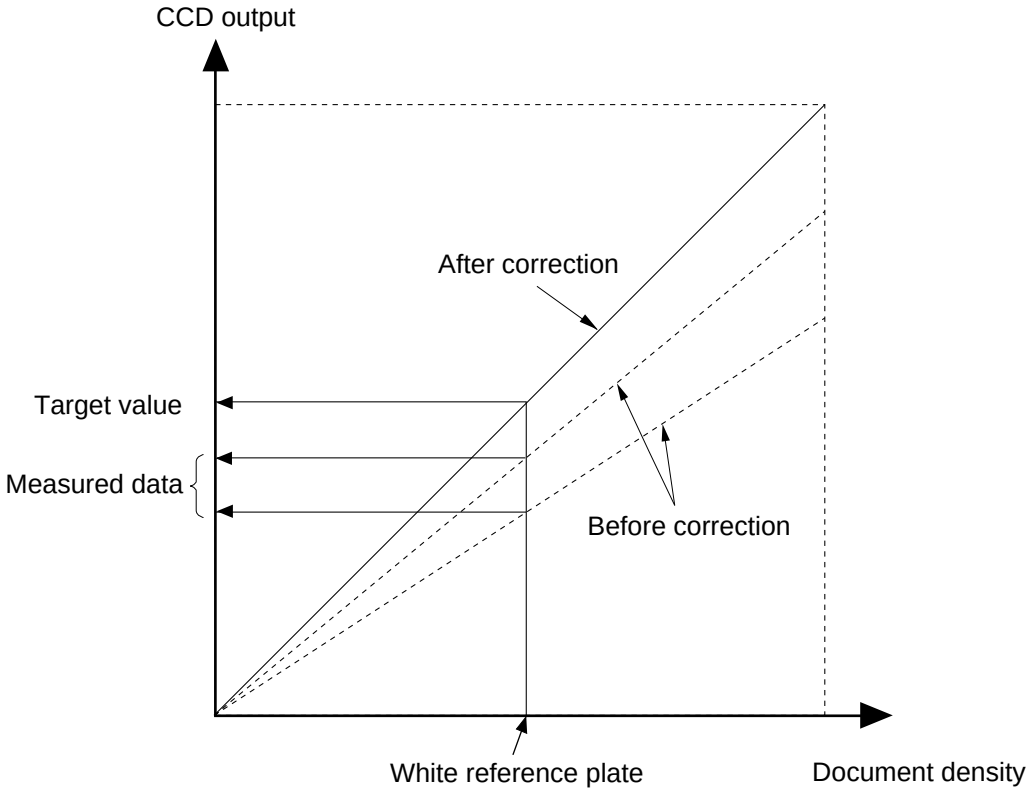


**Figure 4-303**

**Related service mode**
Shading automatic adjustment:
Control panel RMSW ON, Service mode> TEST MODE>2:CCD (Numeric key 2 > Numeric key 8 >


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## C. Magnification ratio process

The magnification ratio in horizontal scanning direction (drum axis direction) is changed by line skipping (for reducing) when writing the image signal to the line memory, or double scanning (for enlarging) when reading out from the line memory.

The magnification ratio in the vertical scanning direction is changed by increasing the speed of the mirror mount's movement (when reducing), or reducing the movement speed (when enlarging).

## D. Edge emphasis / smoothing process

When the character mode is selected on the control panel, edge emphasis processing takes place. When the photo mode is selected, smoothing processing takes place. When edge emphasis processing takes place, it is possible to emphasize an image's gradation variations thus producing a more distinct image. Conversely, the smoothing process softens the image's gradation variations, and produces a softer image. When copying a photo, the smoothing process makes the moiré effect less conspicuous.

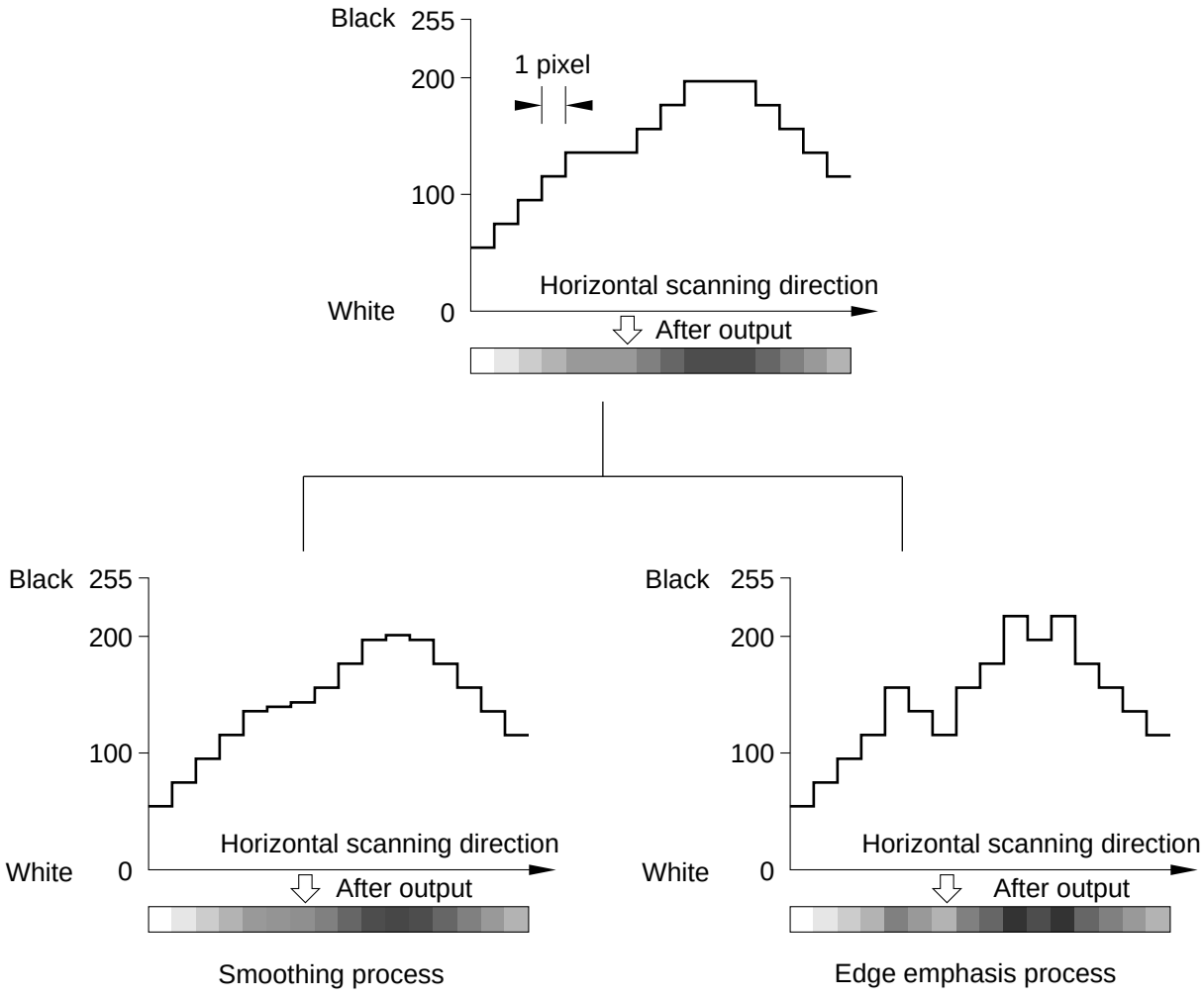


**Figure 4-304**

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## E. Logarithmic correction

The CCD output has linear characteristics with regards to the reflected light from the document, however, the density seen by the eye when looking at a document is not linear in relation to reflected light.

Figure 4-305 shows the relationship between the document density seen by the eye, and that of the CCD output.

In order to correct this, the level is adjusted, using the correction curve shown in Figure 4-306.

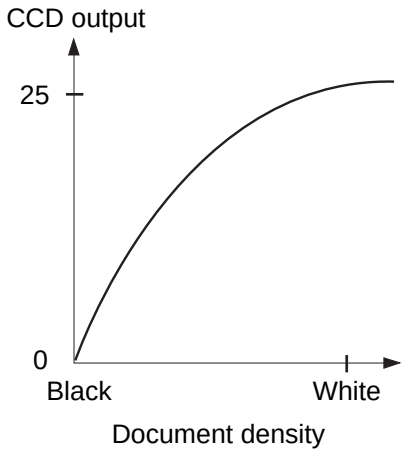


**Figure 4-305**

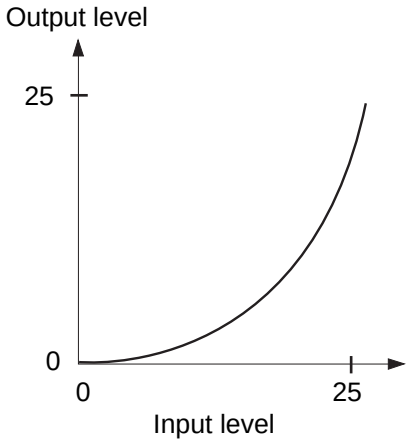


**Figure 4-306**


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## F. Half tone density processing

The half tone density processing correction curve changes depending on the following:

- The copy density setting on the control panel
- The scanning mode (character, character/photo, photo)

In accordance with the copy density setting on the control panel, there is either a light image or a dark image curve as shown in Figure 4-307.

Furthermore, when photo mode is selected in the scanning mode, the gradation characteristics are good, and the curve faithfully reproduces the document's density as shown in Figure 4-308.

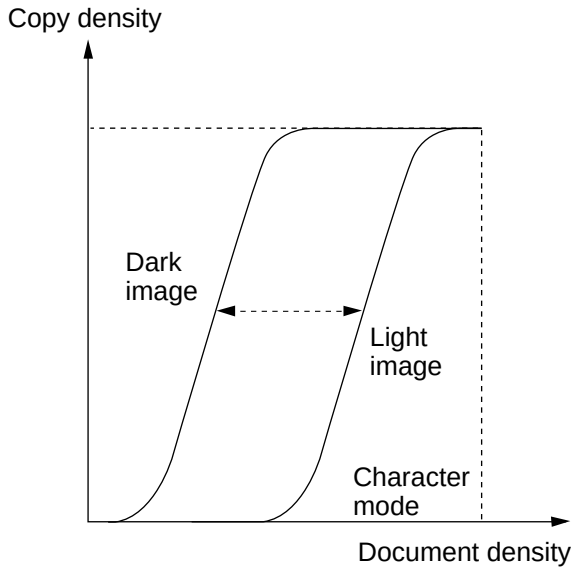


**Figure 4-307**

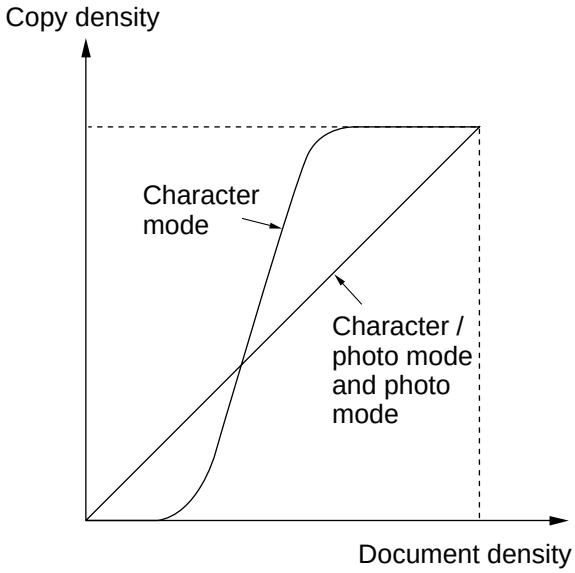


**Figure 4-308**

## G. Binarisation

After the half tone processing has finished, multi-value data are converted into binary data.

The binarisation technique which the unit uses employs is the error diffusion system.

The data which have been binarised are sent to the DC controller PCB with a recording resolution of 1200 x 600pdi equivalent.



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# IV. DISASSEMBLY, ASSEMBLY

This chapter describes mechanical features and operations as well as disassembly and assembly procedures.

The following precautions must be observed during disassembly and assembly work.

1. ⚠ For the sake of safety, disconnect the power plug before performing any disassembly or assembly work.
2. Unless otherwise specified, assembly work is performed in the reverse order of the disassembly operations.
3. Be sure to use the right type (diameter and length) or screws in the right places.
4. An inner-clip washer is used with one securing screw in the metal cover to prevent buildup of static electricity. Make sure to use this washer during assembly work.
5. In principal, the copier must not be operated when parts have been removed.
6. ⚠ Do not throw the drum cartridge into fire - there is a danger of explosion.
7. In order to discharge any static electricity, touch the main unit's metal assembly before embarking on any work relating to the PCB. This will protect the PCB from any electrostatic damage.
8. When disassembling, do not remove screws which have been paint-locked.


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## A. CCD unit

1) Remove the 2 installation screws, remove the copyboard glass stay, and then take out the copyboard glass.

2) Unclip the tab [1] and remove the CCD connector [2].

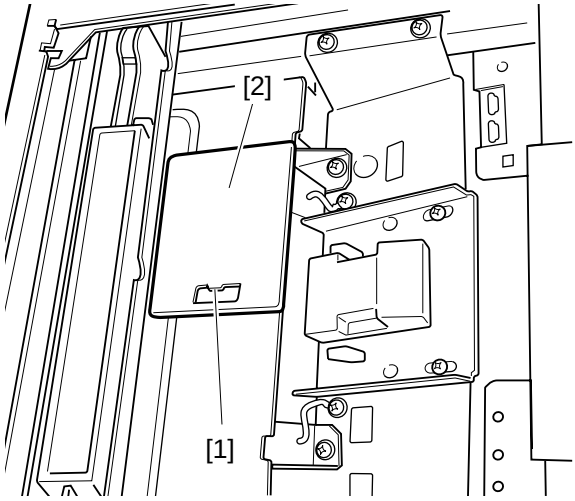


**Figure 4-401**

3) Remove the analog processor PCB connector [3] and flat cable [4].

4) Remove the 4 installation screws [5] and then remove the CCD unit.

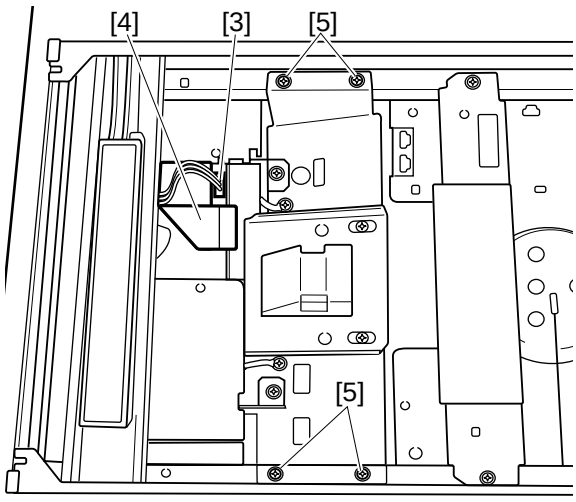


**Figure 4-402**



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# CHAPTER 5

# LASER EXPOSURE SYSTEM

In this chapter the operation, purpose and function of the unit's laser exposure process, as well as the relationship between the electrical and mechanical systems, is summarized. An overview of each part's operation timing is also included.


I. OVERVIEW.....5-1
II. BD SIGNAL GENERATION .....5-3
A. Overview .....5-3
B. BD generation / detection .....5-3
III. LASER DRIVER CIRCUIT .....5-4
A. Operation .....5-4
B. Laser light intensity control .....5-4
IV. LASER SCANNER MOTOR CONTROL.....5-6
A. Operation outline.....5-6
V. DISASSEMBLY, ASSEMBLY .....5-7
A. Laser scanner unit .....5-8



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# I. OVERVIEW

The principal parts making up the laser scanner unit are; the laser beam generating laser unit, the laser scanner motor which contains a six sided mirror for laser scanning and a BD sensor PCB for detection the laser beam.

The laser beam generated by the laser unit illuminates the 6 sided mirror, which rotates at a fixed speed. The laser beam reflected by the 6 sided mirror is filtered through a condensing lens in order to be focussed on the photosensitive drum. The optic path is bent by the lens mirror, and the beam arrives at the photosensitive drum. Then, the laser beam reflected by the BD mirror installed in the laser scanner unit is illuminated onto the BD sensor PCB. (Refer to Figure 5-102)

When the 6 sided mirror is rotating at a fixed speed, the laser beam is scanned onto the photosensitive drum at a fixed speed, the static charge eliminated and then an electrostatic latent image formed.

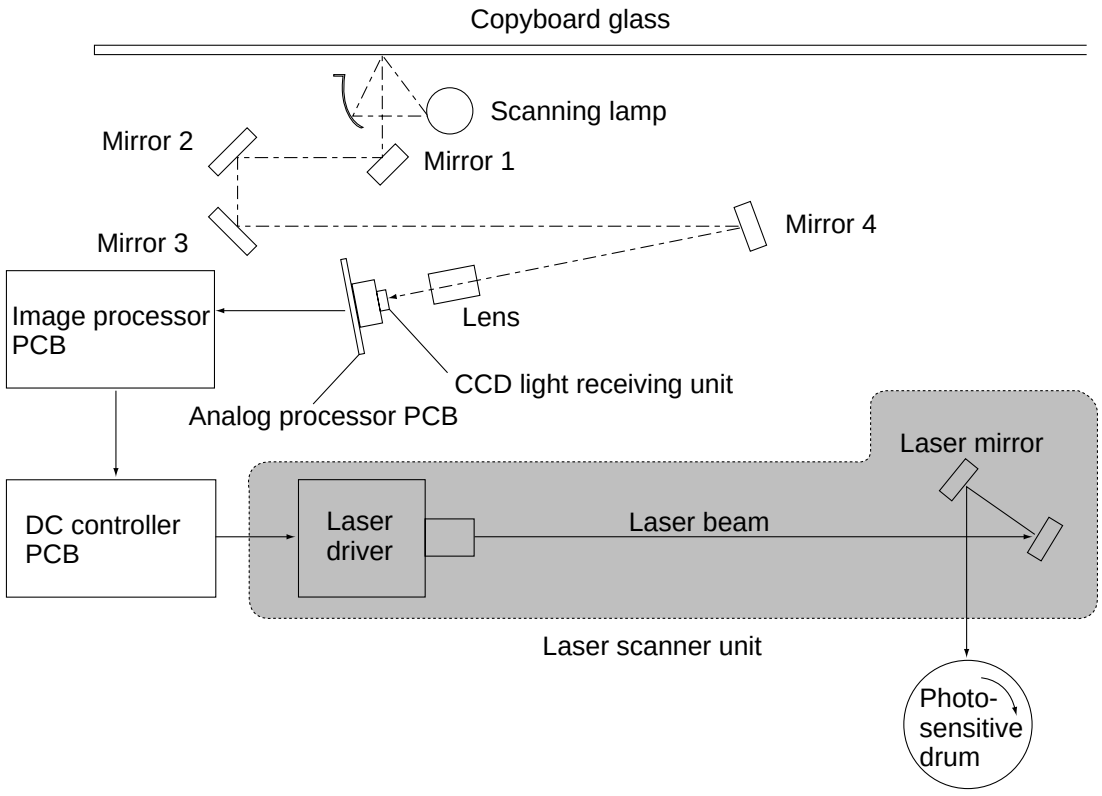


**Figure 5-101**



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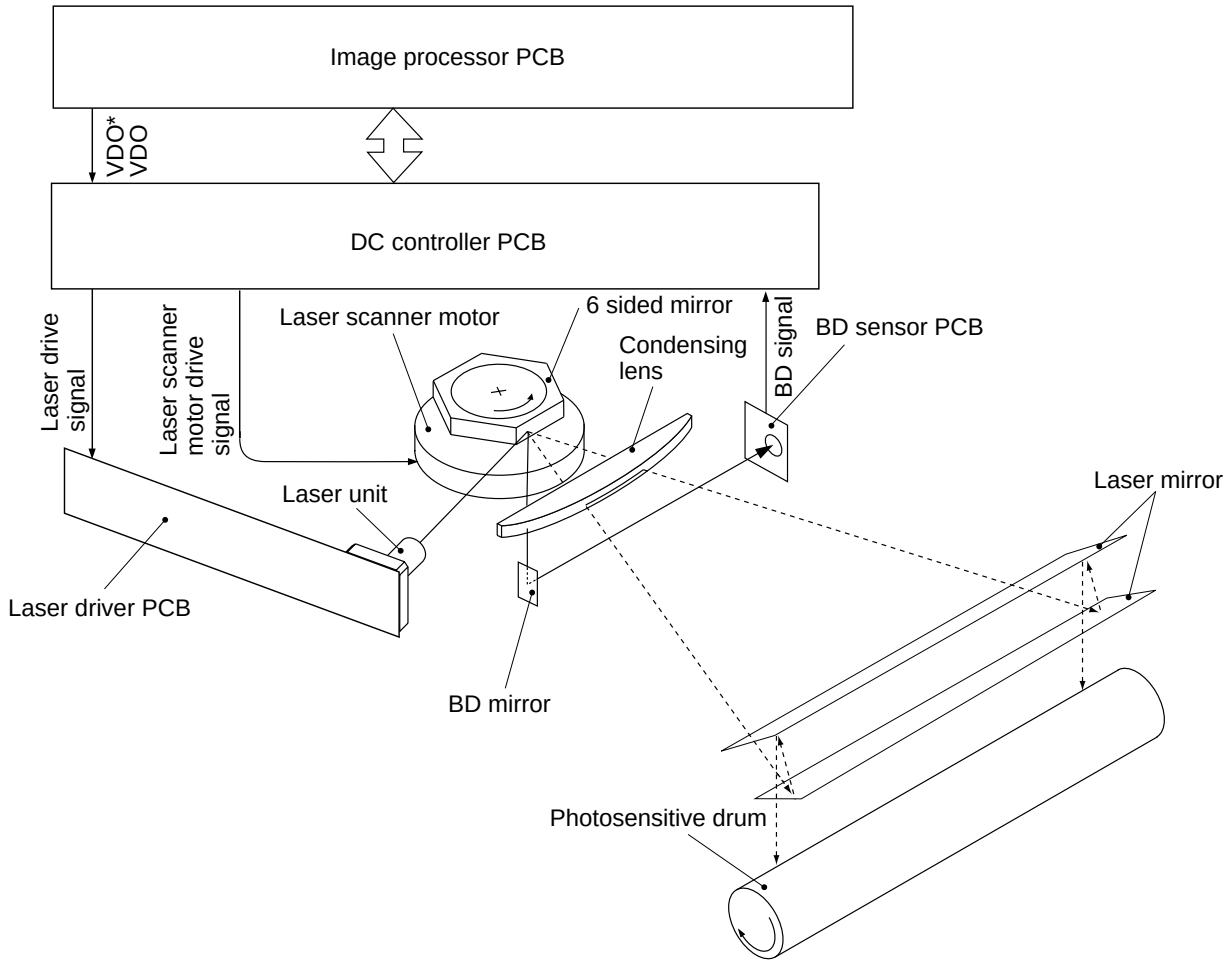


**Figure 5-102**

**Related error code**
##0323: Laser scanner assembly BD signal output error
Laser scanner motor rpm error

**Related service mode**
The printer status is displayed as follows: Service mode > TEST MODE> 6: FACULTY TEST>6-3: SENSOR> Press Numeric key 5. Check the main motor fault condition by status 8 service technician call status Bit 2.


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# II. BD SIGNAL GENERATION

## A. Overview

When the laser is illuminated onto the photosensitive drum, a laser emission start signal (horizontal sync. signal) is necessary. The laser beam sensor signal is used to generate this start signal.

## B. BD generation / detection

The DC controller PCB CPU outputs the laser forced light signal (LON*) at “0”, based on the BDI* signal, and forcibly emits the laser. The laser beam is reflected by the BD mirror and then input in the BD sensor PCB. BD sensor PCB detects this laser beam and generates a BD input signal (BDI*), then sends it to the DC controller PCB CPU (IC301). The CPU (IC301) generates a horizontal sync. signal (BDO*) based on the BDI* signal, and outputs it to the image processor PCB.

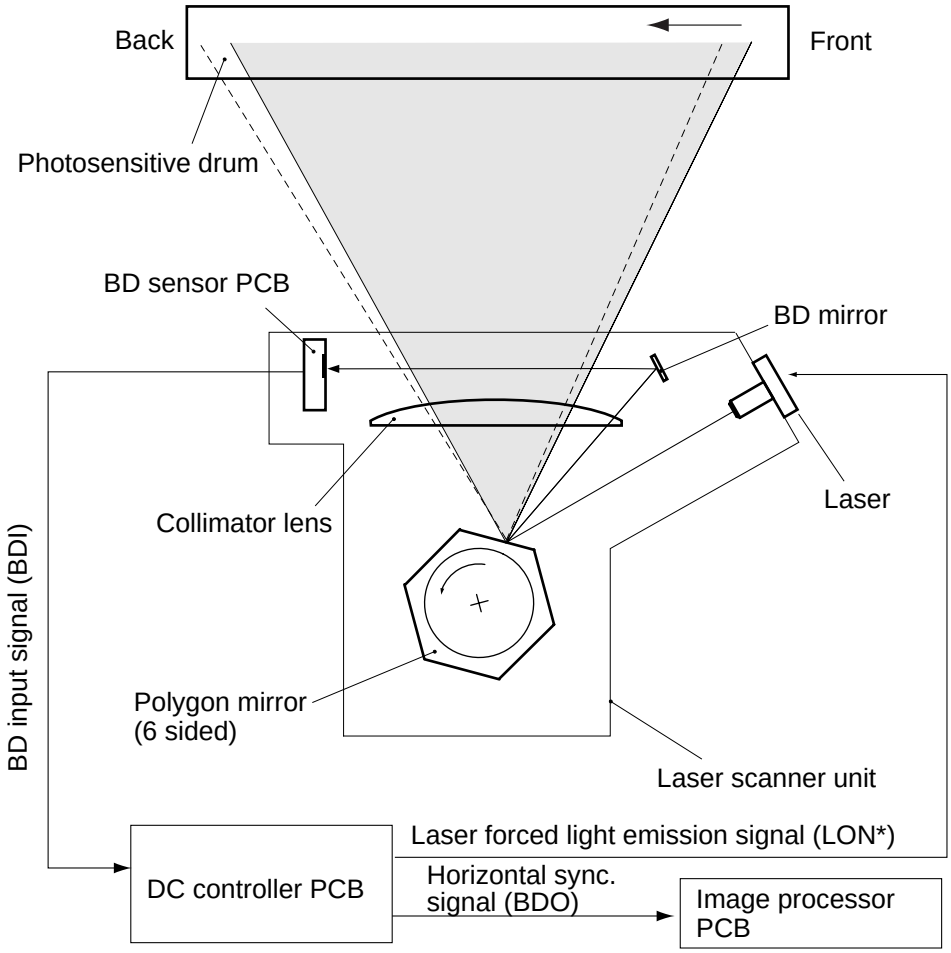


**Figure 5-201**



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# III. LASER DRIVER CIRCUIT

## A. Operation

This circuit turns the laser diode (LD) ON at a fixed light intensity. The fixed beam is based on a video signal (VDO*, VDO) which is sent from the image processor PCB via the DC controller PCB.

The binarised image signal is converted to a VDO signal with the low amplitude differential VDO* signal, inside the image processor PCB, and sent to the DC controller PCB. Then, it is sent unchanged to the laser driver PCB receiver. The receiver returns the low amplitude differential signal to its original form and sends it as a video out signal (VDOUT* signal) to the logic circuit inside the laser driver.

When the image formation enabling signal (ENBL*) from the DC controller PCB (IC30) is “0”, the laser driver PCB, turns the laser diode ON/OFF in accordance with the VDOUT* signal. Furthermore, when the print resolution is output by 1200 dpi equivalent or by 600dpi, by changing the laser light intensity switching signal (600*), the laser light intensity can be altered. By changing the laser light intensity switching signal to “1” when 1200 dpi equivalent, and to “0” when 600pdi equivalent, the laser light intensity is switched by the laser driver IC power adjustment circuit.

## B. Laser light intensity control

The laser (semiconductor laser) has the characteristic that the light intensity will fluctuate greatly when the ambient temperature changes. Therefore, the laser drive current is controlled to change automatically with the changes in the light intensity.

When the laser diode emits light, the laser elements built-in photo-diode receives the laser beam, and returns the received light output voltage, which corresponds to the strength of the light intensity, to the laser driver IC control amplifier circuit. At the control amplifier circuit, the electrical current which was set at the photo diode output voltage and the power adjustment circuit is compared, and the electrical current flow to the laser diode is controlled. This laser control takes place constantly during laser beam emission.


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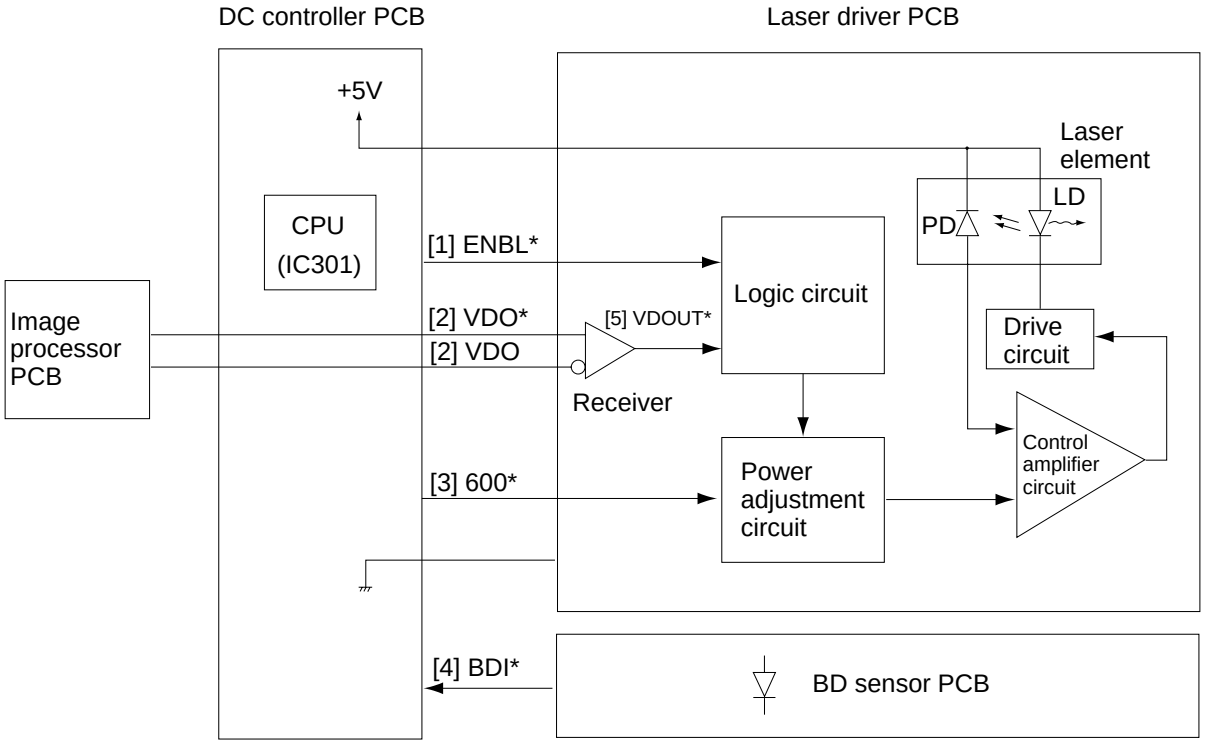


[1] ENBL* : Image formation enabling signal
[2] VDO*/VDO : Video signal
[3] 600* : Laser beam changeover signal
[4] BDI* : BD input signal
[5] VDOUT* : Video out signal

**Figure 5-301**

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# IV. LASER SCANNER MOTOR CONTROL

## A. Operation outline

The laser scanner motor is a 3 phase 8 pole DC brushless motor integrated, with the laser scanner motor drive circuit.

The laser scanner motor rotates when receiving the instruction from the DC controller PCB. The supply of electrical power to the motor is controlled inside the scanner driver PCB.

When the scanner motor acceleration signal (ACC*) is output from the DC controller PCB, electrical power is supplied from the scanner driver PCB motor drive circuit, and the laser scanner motor rotation is maintained.

When the laser scanner motor is rotating by the CPU forcing the laser to emit light, a BDI* signal is sent from the BD sensor PCB to the DC controller PCB. The DC controller PCB's CPU detects the BDI* signal cycle, and the ACC* signal controls the laser scanner motor rotation until it reaches the stipulated rotation count.

Furthermore, when stopping the laser scanner motor, the CPU changes the scanner motor deceleration signal (DEC*) to "0", and stops the motor's rotation.

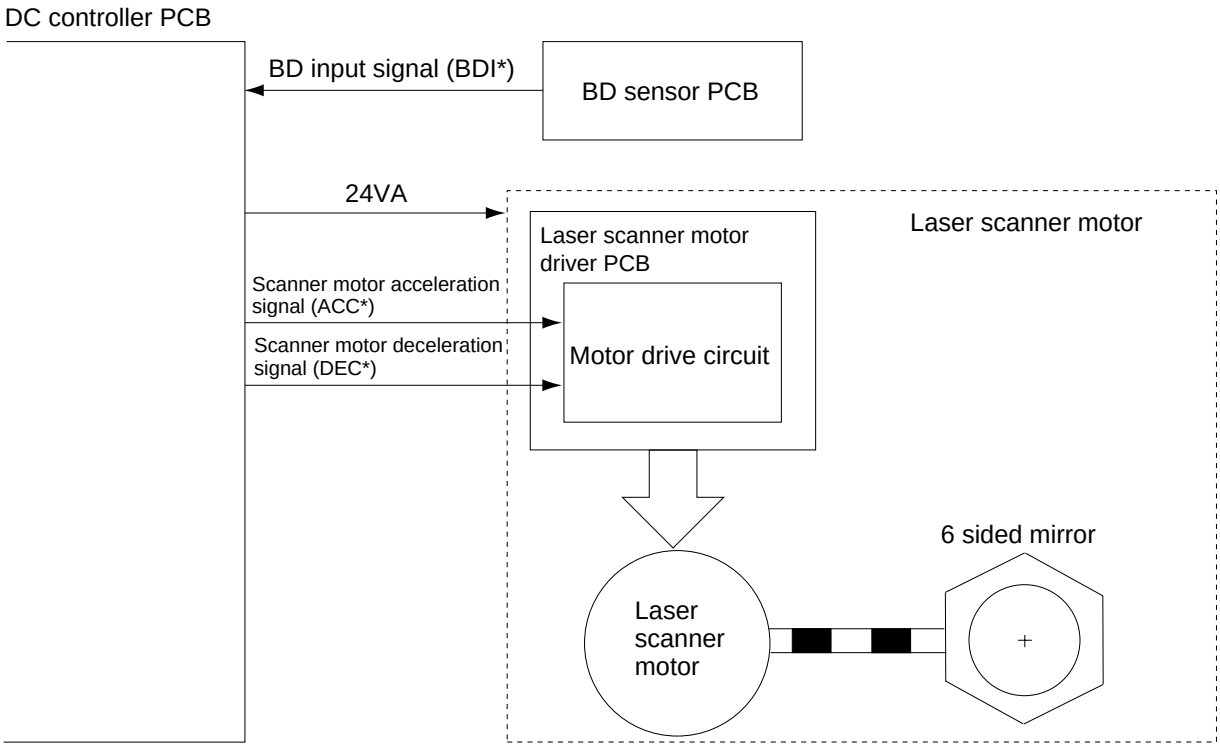


**Figure 5-401**


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# V. DISASSEMBLY, ASSEMBLY

This chapter describes mechanical features and operations as well as disassembly and assembly procedures.

The following precautions must be observed during disassembly and assembly work.

1. ⚠ For the sake of safety, disconnect the power plug before performing any disassembly or assembly work.
2. Unless otherwise specified, assembly work is performed in the reverse order of the disassembly operations.
3. Be sure to use the right type (diameter and length) or screws in the right places.
4. An inner-clip washer is used with one securing screw in the metal cover to prevent buildup of static electricity. Make sure to use this washer during assembly work.
5. In principal, the copier must not be operated when parts have been removed.
6. ⚠ Do not throw the drum cartridge into fire there is a danger of explosion.
7. In order to discharge any static electricity, touch the main units metal assembly before embarking on any work relating to the PCB. This will protect the PCB from any electrostatic damage.
8. When disassembling, do not remove screws which have been paint-locked.

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## A. Laser scanner unit

1) Remove the printer from the main body. (Refer to 9-19)

2) Remove the mylar sheet [1] and the sponge [2] from the upper part of the laser scanner unit.

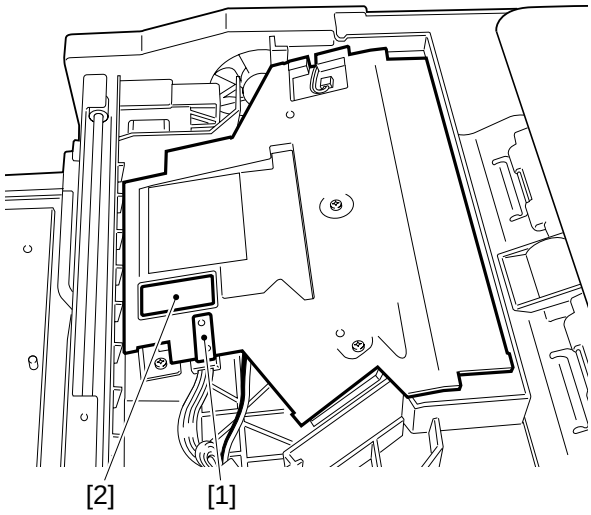


**Figure 5-501**

3) Remove the 3 connectors [3] which are connected to the laser scanner unit. Then, after removing the 4 installation screws [4], remove the laser scanner unit [5].

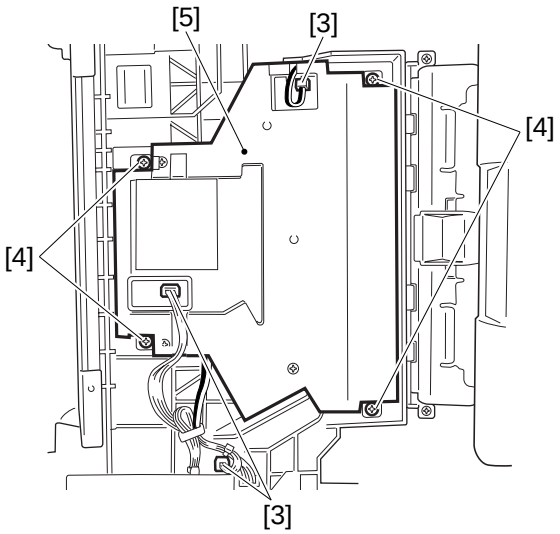


**Figure 5-502**


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# CHAPTER 6

# IMAGE FORMATION SYSTEM

In this chapter the operation, purpose and function of this unit's image formation process as well as the relationship between the electrical and mechanical systems is summarized. An overview of each part's operation timing is also included.


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# I. OVERVIEW

## A. Construction

The principal components of image formation system are shown in the diagram below.

This unit's image formation system uses a cartridge system. The principal components are the photosensitive drum, primary charging roller, processing cylinder, drum cleaner and toner. These are integrated to form the cartridge system.

The DC controller PCB has a built-in high-voltage output assembly, and high-voltage is output for the charging, with the designated timing.

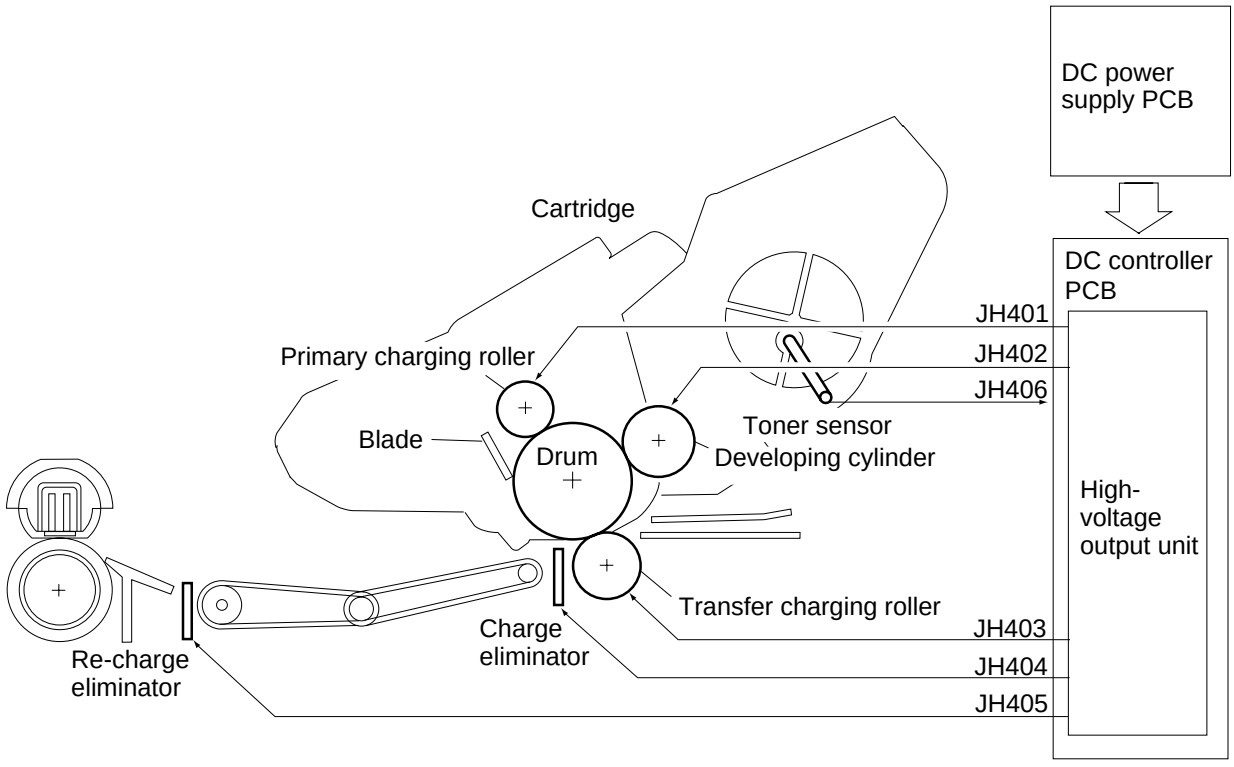


**Figure 6-101**

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## ■ High voltage related output sequence

Conditions: When copying 2 sheets of A4 size paper.

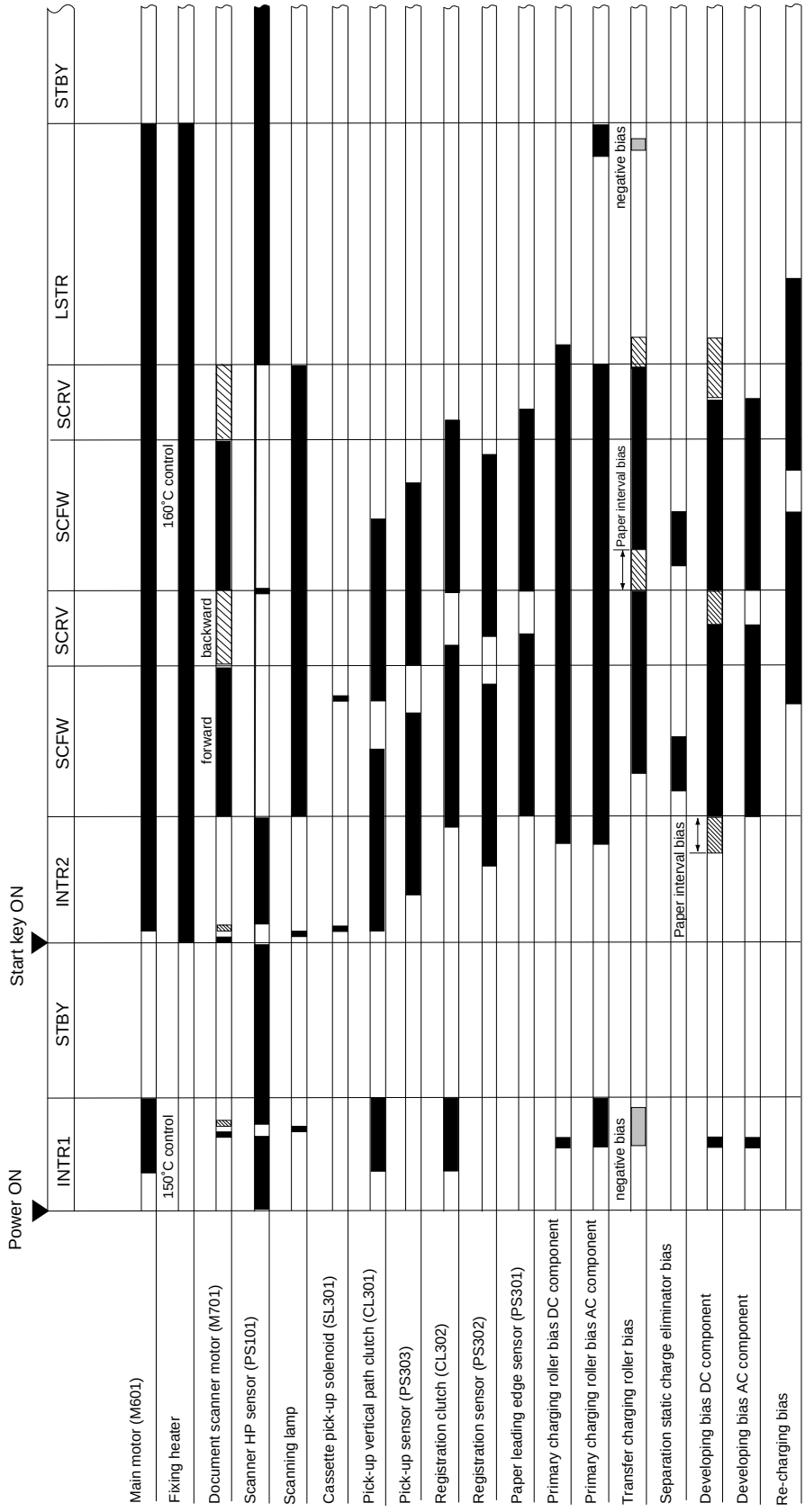


**Figure 6-102**


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# II. PRIMARY CHARGING ROLLER BIAS CONTROL

## A. Outline

The primary charging roller bias is controlled by the DC controller PCB's CPU (IC301). AC bias as well as DC bias is applied to the primary charging roller in order to stabilize the charging.

- DC bias fixed voltage control
- AC bias fixed current control
- Bias switching control

## B. Control operation

The outputs of the DC bias and AC bias, which are applied to the primary charging roller, are controlled by the DC (DCPWM) control signal and AC (PRACON) control signal respectively, which are output from the CPU (IC301). The DC bias, which is output from the DC drive unit, is detected by the DC voltage sensor circuit, and is fed back to the DC drive circuit via the comparison circuit. In this way, the CPU controls the primary high-voltage DC component (constant voltage control).The AC bias output is detected by the AC current control circuit, is fed back to the AC drive circuit via the comparison circuit, and controlled by the CPU (constant current control).

Furthermore, the bias output to the primary charging roller of this unit changes depending on the print resolution (1200dpi equivalent or 600dpi equivalent).

The bias output switches between the DC and AC drive circuits, in response to the bias switching signal (1200dpi equivalent) from the CPU.

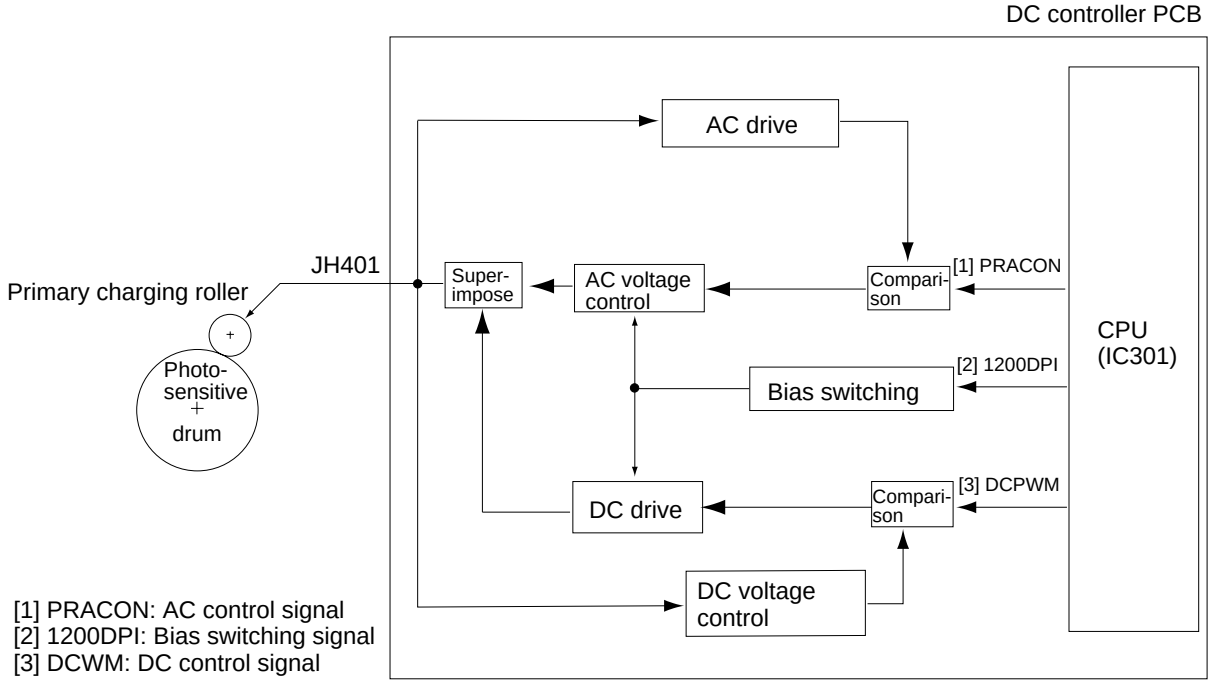


**Figure 6-201**



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# III. TRANSFER CHARGING ROLLER BIAS CONTROL

## A. Overview

This unit employs the roller direct transfer charging system. There are 4 types of transfer charging roller bias, their respective roles and timings are explained below.

### 1. Transfer bias

Positive voltage is applied by this bias, which transfers the toner from the photosensitive drum to the paper.

### 2. Cleaning bias

Because a direct transfer system is employed, there are times when, because of jams, etc., the toner on the drum adheres to the transfer charging roller. In order to clean this toner off, negative voltage is applied at the times below, causing the toner which has adhered to the transfer charging roller to return to the photosensitive drum. The output of this negative voltage is as follows:

- During forward rotation
- During part of backward rotation

### 3. Reference bias

Due to fluctuations in the environment, or the transfer charging roller's resistance, there is the possibility that the transfer effectiveness will fluctuate. In order to minimise image deterioration caused by this, the transfer charging roller bias applied voltage level is compensated.

The reference bias is applied when the start key is pushed, and the voltage level compensated.

### 4. Paper interval bias

When performing continuous printing, the bias value is lowered to prevent the toner between the paper adhering to the transfer charging roller.


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## B. Bias control

The transfer charging roller bias is controlled by the DC controller PCB's CPU (IC301). When a positive bias drive signal (TRPWM) is output from CPU, the positive bias generation circuit comes into operation.

Also, when a negative bias signal (TRNFOT) is output, the negative bias generation circuit comes into operation.

As mentioned before, 4 types of bias are applied to the transfer charging roller at designated times.

Furthermore, the transfer bias to the transfer charging roller is switched, depending on the print resolution (1200dpi equivalent and 600dpi equivalent) of this unit.

By means of the bias switching signal (1200DPI) from the CPU, the output voltage from the positive bias generation circuit and negative bias generation circuit switches over.

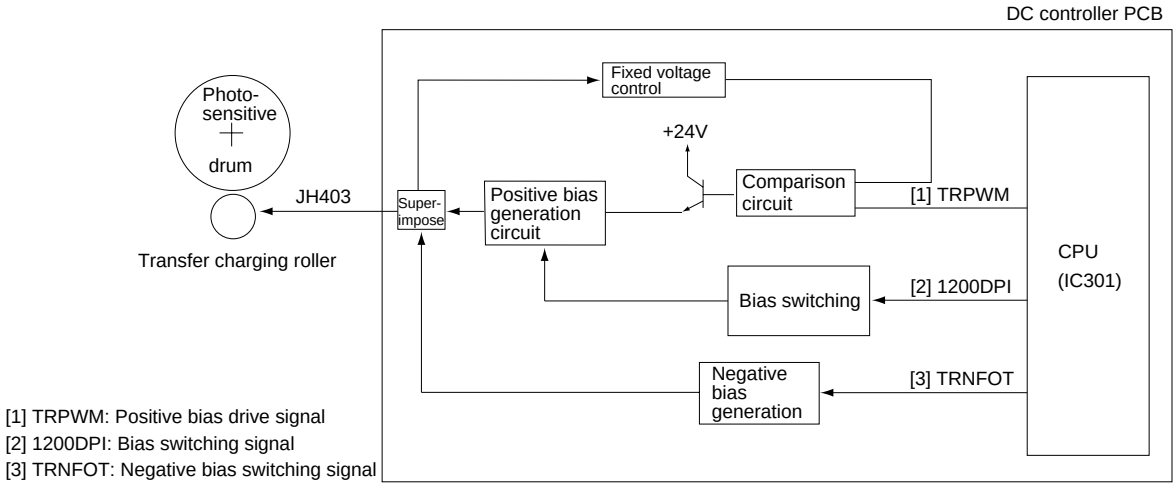


**Figure 6-301**



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# IV. SEPARATION STATIC CHARGE ELIMINATOR BIAS CONTROL

## A. Operation

The separation static charge eliminator is controlled by the DC controller PCB's CPU (IC301)

When a separation static charge eliminator bias ON signal (DCSON) is output from the CPU, the drive circuit transformer T406 comes into operation and negative voltage is applied to the separation static charge eliminator.

Also, when output voltage from the transformer T406 is returned to the bias drive circuit, the constant voltage control is performed in order to output a fixed voltage.

Furthermore, the separation static charge eliminator supply bias is switched depending on the print resolution (1200dpi equivalent and 600dpi equivalent) of this unit,.

The bias drive circuit, by means of the bias switching signal (1200DPI) from the CPU, judges the print resolution and the switches the output voltage.

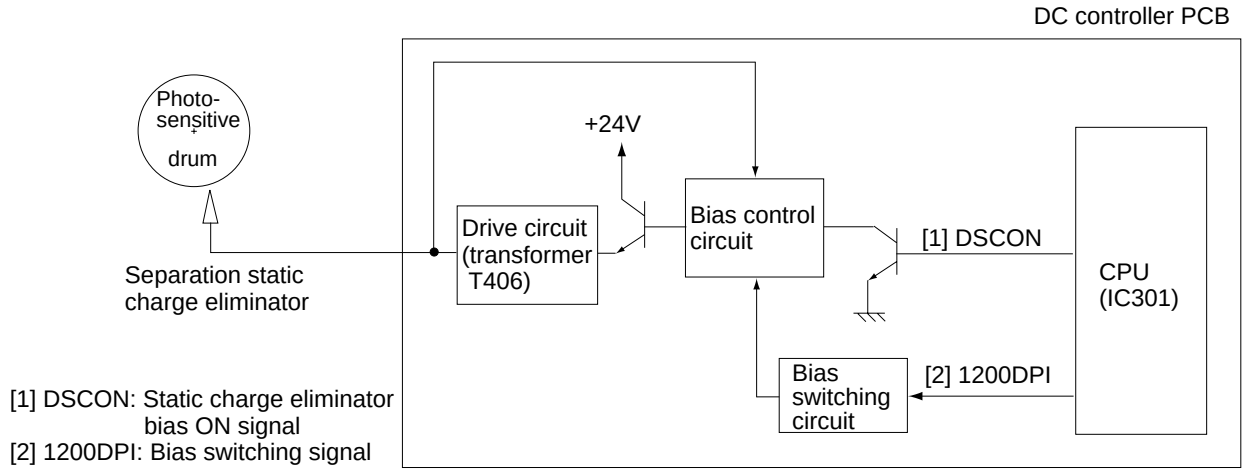


**Figure 6-401**


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# V. DEVELOPING BIAS CONTROL

## A. Outline

The circuit shown in Figure 6-501 is the circuit which controls the developing bias in the DC controller PCB. It's principal functions are as follows:

- Developing bias AC ON/OFF control
- Developing bias DC ON/OFF control
- Developing bias DC constant voltage control

## B. Operation

The developing bias control is performed by the DC ON/OFF signal (DVDUP) and the AC ON/OFF signal (DVACON), which are output from the DC controller PCB's CPU (IC 301).

When DVDUP*=0 is output from the CPU, developing bias DC is applied by power being supplied to the DC bias generation circuit,. And, when the DVACON signal is output from the CPU, AC bias is generated.

Due to the CPU outputting these signals at designated times, developing bias is generated and applied to the developing cylinder.

Furthermore the output voltage from the DC bias generation circuit undergoes constant voltage control by being returned to the comparison circuit.

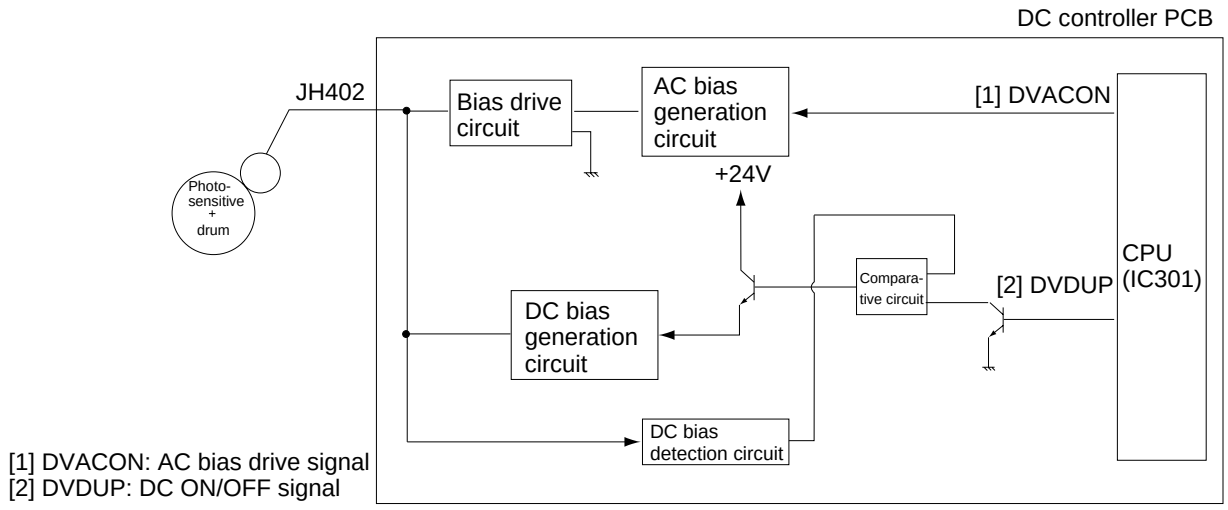


**Figure 6-501**



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# VI. RE-CHARGE BIAS CONTROL

## A. Operation

The unit re-charges once again before fixing, in order to increase the transfer toner adhesiveness, which has been weakened by the separation static charge.

The re-charge bias is controlled by the DC controller PCB's CPU (IC301).

When a re-charge bias ON signal (RECON) is output from the CPU with the prescribed timing, the drive circuit transformer T407 comes into operation and DC positive bias is applied to the re-charge eliminator.

Also, when output voltage from the transformer T406 is returned to the bias control circuit, constant voltage control occurs in order to output a fixed voltage.

Furthermore, the re-charge eliminator power supply bias is switched depending on the print resolution (1200dpi equivalent and 600dpi equivalent).

The bias drive circuit, by means of the bias switching signal (1200DPI) from the CPU, judges the print resolution and the switches output voltage.

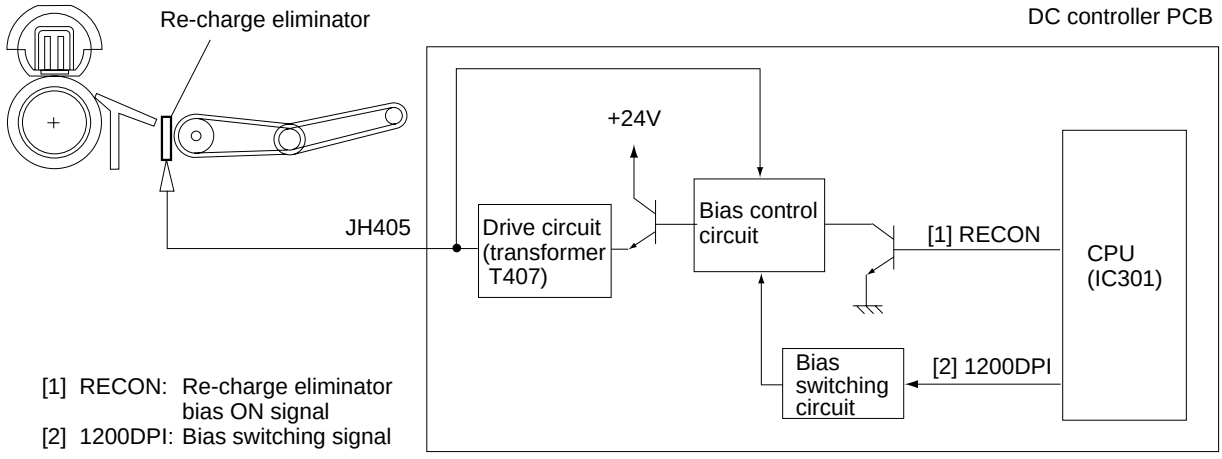


**Figure 6-601**


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# VII. CARTRIDGE DETECTION

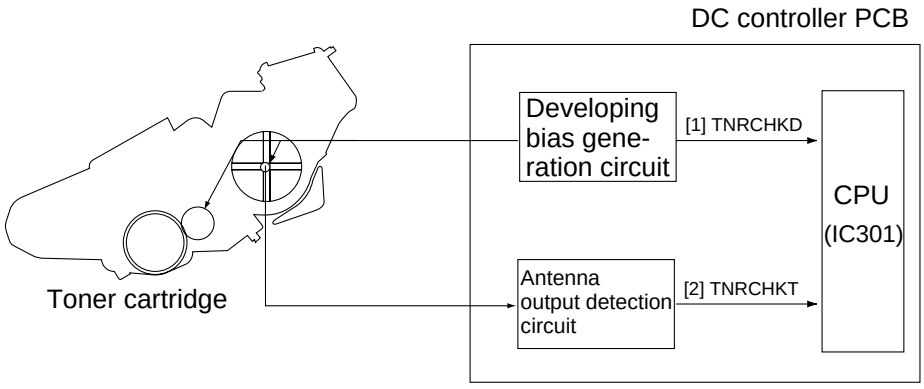
## A. Operation

The circuit for detecting whether or not there is a cartridge, and the volume of toner in the cartridge, is shown in the diagram below.

The DC controller PCB's CPU (IC301) compares the developing bias AC (TNRCHKD) which has been sent from the developing bias generation circuit and the output signal (TNRCHKT) which has been output from the antenna inside the cartridge, and, judges whether there is a toner cartridge, and also the level of toner in the cartridge.

When the developing bias is applied to the developing cylinder, the CPU checks the difference between the 2 signals and judges whether there is a toner cartridge, and also the level of toner in the cartridge.

Furthermore, the volume of remaining toner is regularly monitored when the developing bias is being applied, but the presence of the cartridge is only monitored when developing bias is being applied during the initial rotation.




[1] TNRCHKT: Developing bias AC output [2] TNRCHK: Antenna output signal

**Figure 6-701**



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# CHAPTER 7

# PICK-UP / FEEDING SYSTEM

In this chapter, the operation, purpose and function of the unit's paper feeding, from pick-up to delivery, as well as the relationship between the electrical system and the mechanical system is summarized. An overview of each part's operation timing is also included.

This chapter contains illustrations of the main unit with an automatic document feeder installed.

Refer to the ADF service manual, which is included in this manual, for details regarding the construction of the automatic document feeder.


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# I. OVERVIEW

## A. Construction Overview

The construction of the unit's pick-up feeding system is illustrated in the diagram below.

The pick-up feeding system rollers in the main unit are all driven by the main motor (M601) via the gear and clutch.

### ■ Jam detection sensors

| Symbol | Sensor name | Function |
|---|---|---|
| PS301 | Paper leading edge sensor | Detects the paper's leading edge and controls the laser ON timing. |
| PS302 | Registration sensor | Detects the timing to form a loop in the paper leading edge, at the registration roller. |
| PS303 | Paper sensor | Detects the feeding condition of paper picked-up from the cassette while it is in the vertical path assembly. |
| PS306 | Delivery sensor | Detects the feeding condition of the delivery assembly's paper. |

**Table 7-101**

### ■ Paper sensor and size sensors

| Symbol | Sensor name | Function |
|---|---|---|
| PS305 | Cassette paper sensor | Detects whether there is paper present in the cassette. |
| PS501 | Multi-feeder paper presence sensor | Detects whether there is paper present in the multi-feeder. |
| PS304 | Paper width sensor | Detects the paper width. If paper is fed which is different in width from the paper size set by the cassette paper size lever, the feeding operation will stop. |

**Table 7-102**

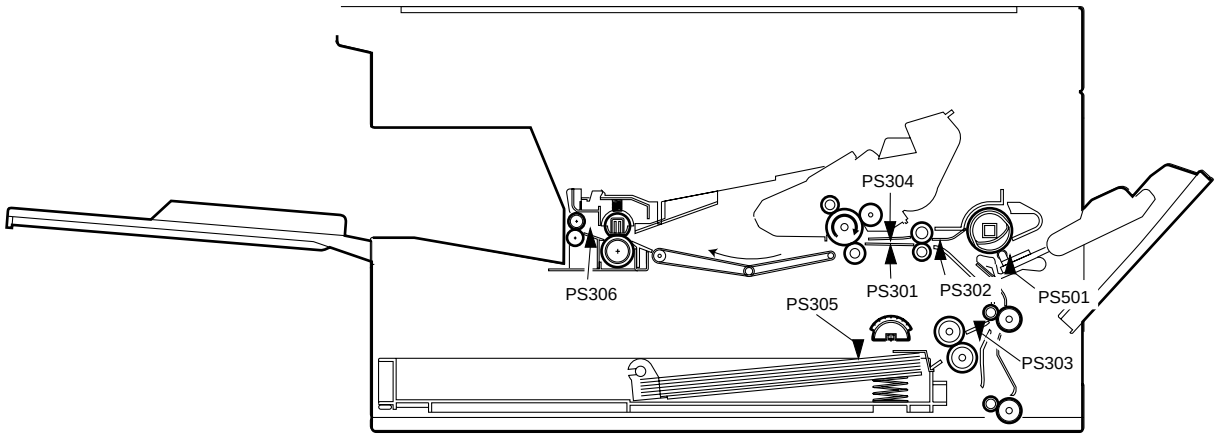


**Figure 7-101**

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# II. PICK-UP FEEDING OPERATION

## A. Overview

The unit's pick-up feeding system is controlled by the DC controller PCB's CPU (IC301). The pick-up feeding system's rollers are all driven by the main motor (M601) via the gear and clutch.

The paper picked-up from the paper cassette and multi-feeder is fed to the registration roller unit by the vertical path roller, which is driven by the vertical path clutch (CL301). The vertical path clutch (CL301) is controlled by the DC controller PCB's vertical path clutch drive signal (CL301D). At this time the registration roller is not revolving, therefore the paper stops moving and a loop formed at the leading edge, and any correction necessary is made to ensure the paper is not fed at a skew angle. At the designated time, the DC controller PCB (IC301) turns the registration clutch ON, and by the main motor's revolutions being transmitted to the registration roller, paper is fed and passed through the transfer, separation and fixing/delivery assemblies to the delivery tray.

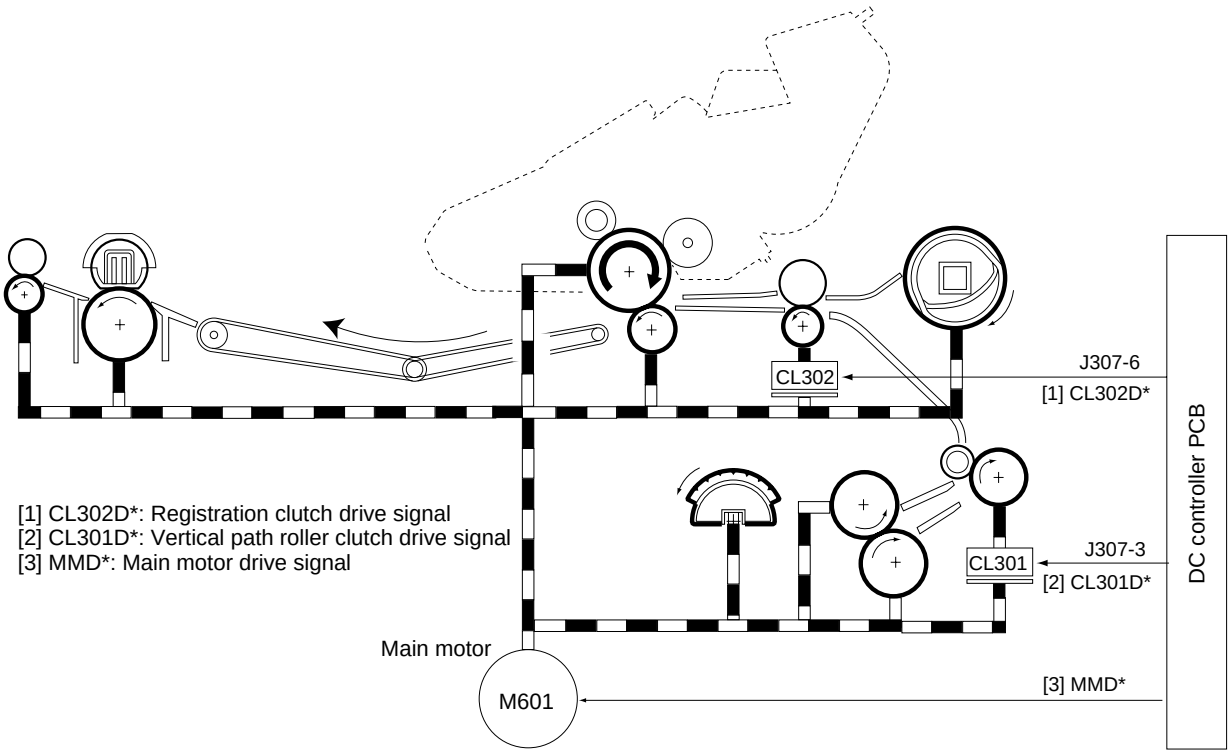


**Figure 7-201**


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# III. CASSETTE PICK-UP MECHANISM

## A. Pick-up operation

The pick-up roller rotation is controlled by both the pick-up roller drive gear which transmits the main motor's (M601) drive to the pick-up drive axis gear, and the pick-up solenoid (SL301).

The construction of the cassette pick-up assembly is illustrated in Figure 7-302.

When the main motor rotates, the connected drive relay gear also begins to rotate. At this time, the cogless part of the feeding roller drive gear is in the drive relay gear position, and the 2 gears are not engaged, therefore power is not transmitted to the pick-up drive axis gear.

The pick-up solenoid ON signal (SL301D*) is output from the DC controller PCB, and when the solenoid comes ON, the paper roller drive gear is released, and by the push of the control arm the paper roller drive gear rotates a small amount.

When the feeding roller drive gear connected to this rotates, power is transmitted to the pick-up drive axis gear, and the pick-up roller rotation begins.

When the pick-up roller has rotated once, the drive relay gear position and the cogless part of the feeder roller drive gear match, therefore the main motor's drive is no longer transmitted and the pick-up roller rotation stops.

The paper which has been picked-up is separated by the cassette's separation tab and separation roller, and then sent to the pick-up vertical path assembly. The pick-up/feeding rollers are rotated by the main motor (M601) rotation which is transmitted via the vertical path clutch (CL301), and paper is sent out to the registration roller assembly.

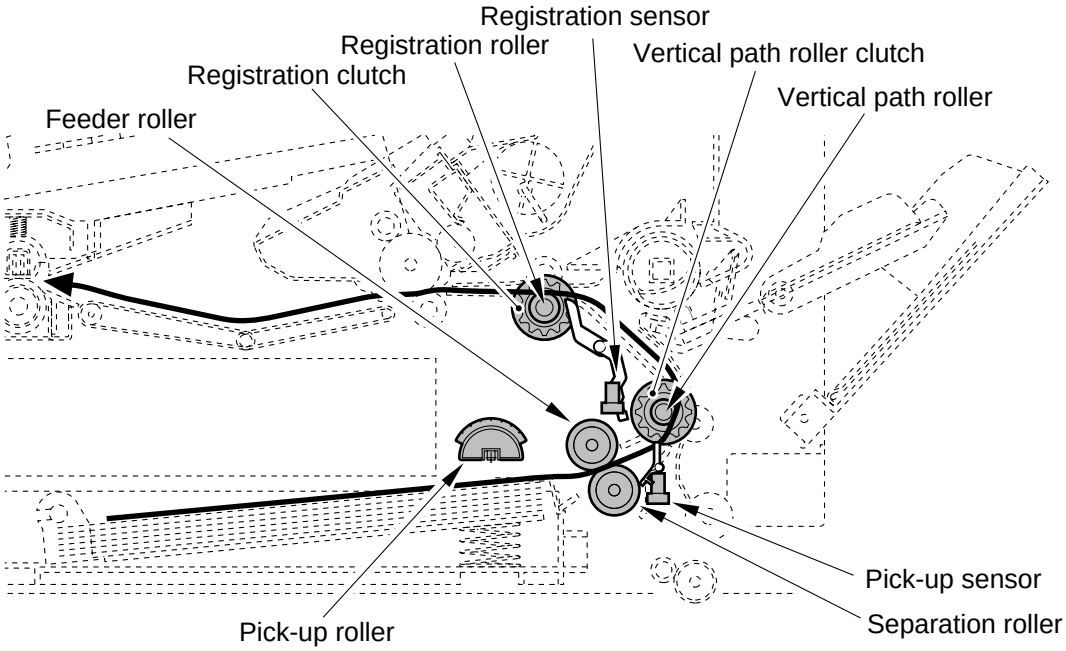


**Figure 7-301**



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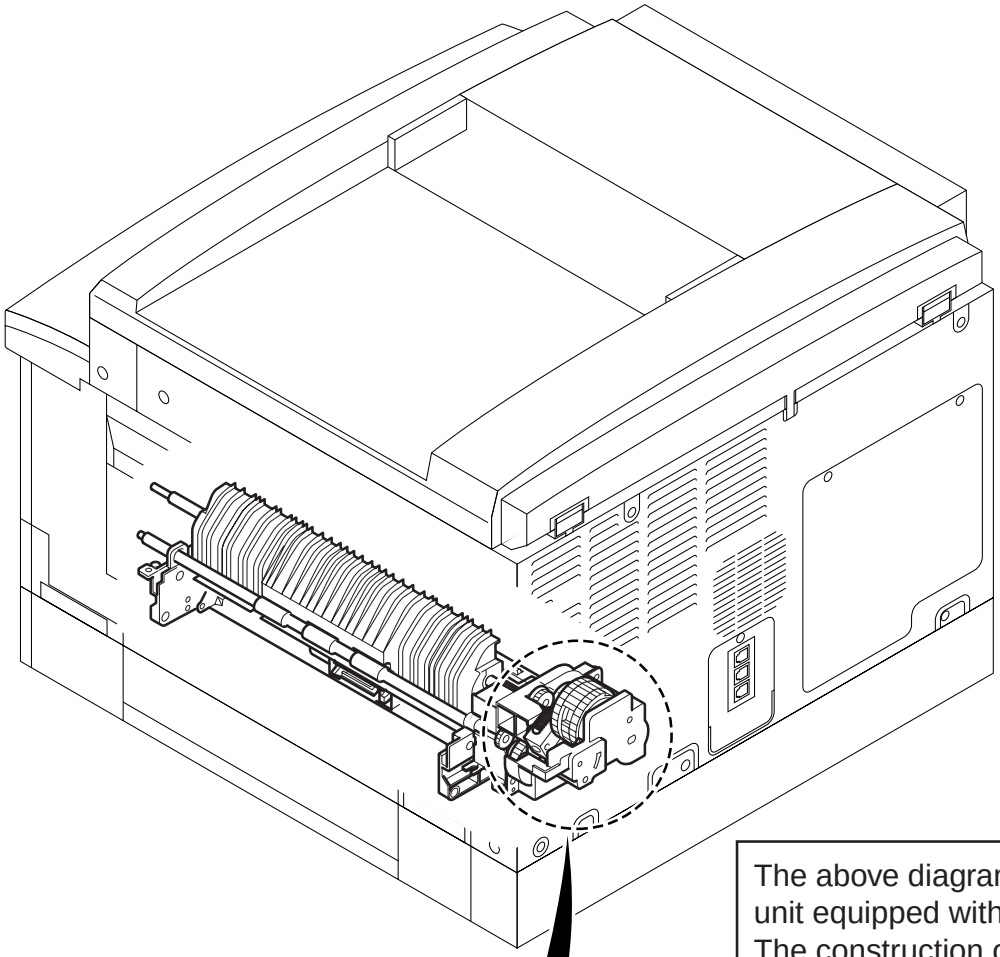
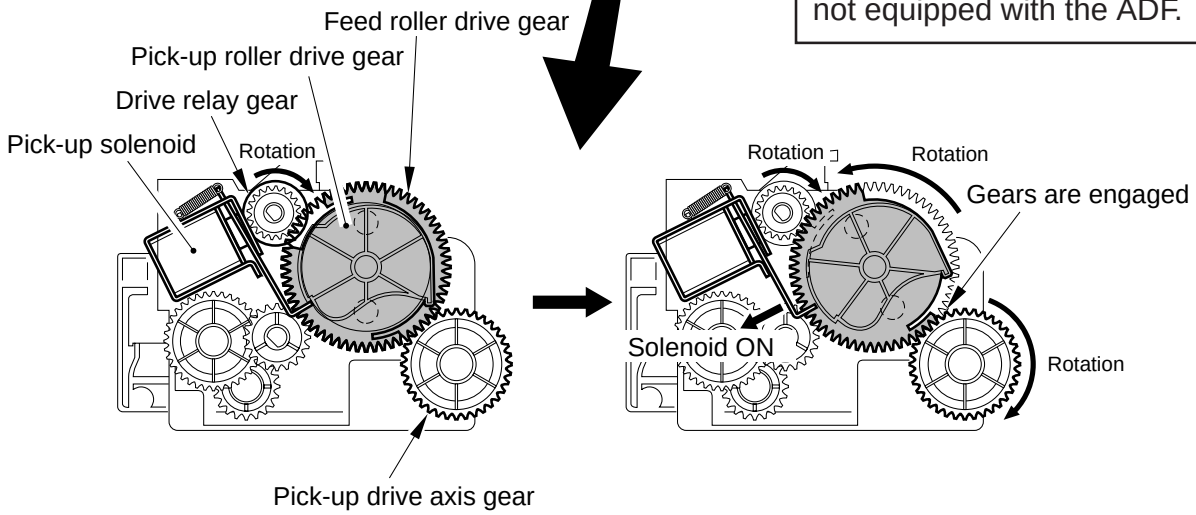


The above diagram shows a unit equipped with an ADF. The construction of the main unit is also the same for units not equipped with the ADF.




The pick-up roller drive gear is at a standstill due to the pick-up solenoid being OFF. (Pick-up/feed rollers are not rotating)

The pick-up roller drive gear rotates due to the pick-up solenoid being ON. Therefore the pick-up drive gear rotates. (Pick-up/feed rollers are rotating)

**Figure 7-302**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## B. Retry pick-up

When paper is not picked-up even when the pick-up roller is rotating, the retry pick-up operation occurs.

The DC controller PCB's CPU counts the time from when the paper solenoid (SL301) comes ON. If the pick-up sensor (PS303) cannot detect the paper's leading edge within a designated period of time, the pick-up solenoid comes ON again and the pick-up operation is retried. Even when the retry pick-up is actuated once, if the pick-up sensor does not detect the paper's leading edge within the specified period of time, it judges there is a jam, and a jam message is displayed on the control panel's display.

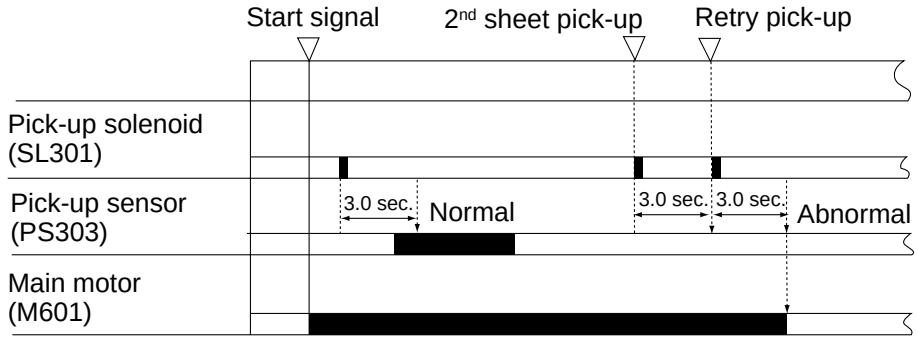


**Figure 7-303**



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## C. Paper size detection

The size of the paper inside the cassette is monitored by the DC controller PCB's CPU. The CPU detects the change in position of the cassette paper size lever which is set by the customer.

When the cassette is inserted into the main unit, the paper size lever presses the main unit's paper size switch and therefore the presence of paper in the cassette and also the paper size is monitored.

The construction of the paper size switch is illustrated in the diagram below. The paper size lever is comprised of 4 push switches which detect the paper size.

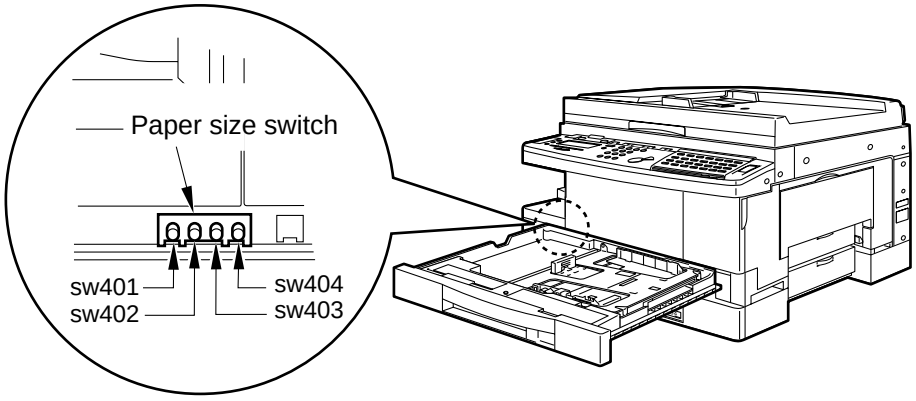


**Figure 7-304**

| | A3 | B4 | A4 | A4R | B5 | B5R | A5 | 11 × 17 | LGL | LTR | LTRR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SW401 | ● | ● | ○ | ○ | ● | ● | ○ | ○ | ○ | ● | ● |
| SW402 | ● | ○ | ● | ● | ○ | ● | ○ | ● | ● | ○ | ○ |
| SW403 | ○ | ● | ○ | ● | ○ | ● | ● | ○ | ● | ○ | ● |
| SW404 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● |

● : Push switch pressed
○ : Push switch not pressed

**Table 7-301**


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# IV. MULTI-FEEDER PICK-UP

## A. Overview

The multi-feeder is the mechanism which continuously picks-up paper stored in the multi-feeder tray. The paper is picked-up from the top.

The paper in the tray is lifted up by the lifter plate and pressed down by the multi feeder pick-up roller. The multi-feeder pick-up roller is driven by the main motor (M601), via the solenoid and gear. The paper is fed one sheet at a time through the use of the multi-feeder pick-up roller and separation pad to the registration roller. This series of operations takes place for every pick-up.

The multi-feeder paper size is designated by the user in the control panel.

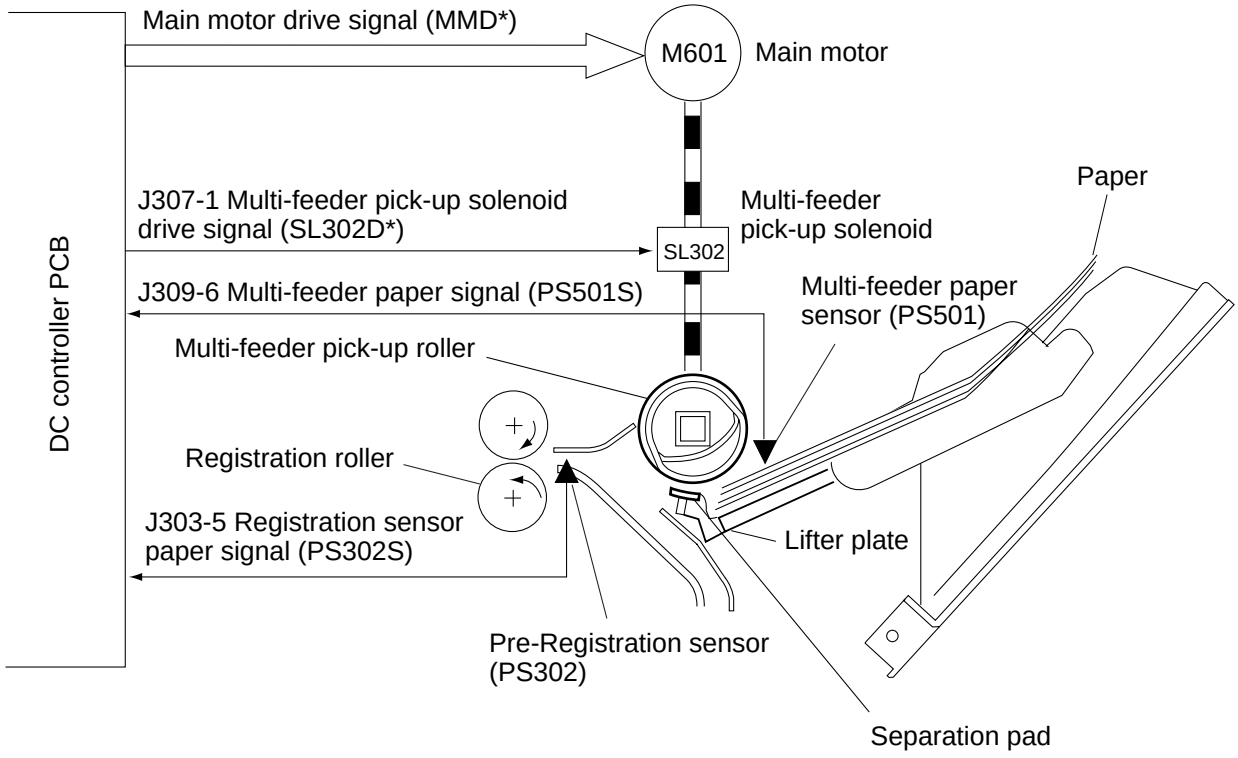


**Figure 7-401**



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# B. Multi-feeder pick-up mechanism

## 1. Lifter plate operation

The mechanism for raising the lifting plate is illustrated in the diagram below.

During standby, the lifter plate is supported and lowered by the cams fitted onto the front and rear of the multi-feeder pick-up roller.

When the paper roller rotates, the cams are also made to rotate, causing the lifter plate to rise, and the paper set in the multi-feeder comes into contact with multi-feeder pick-up roller.

A separation pad and sub pad are fitted onto the pick-up roller's facing surface, and through the separation process, only one sheet of paper is fed at a time to the main unit.

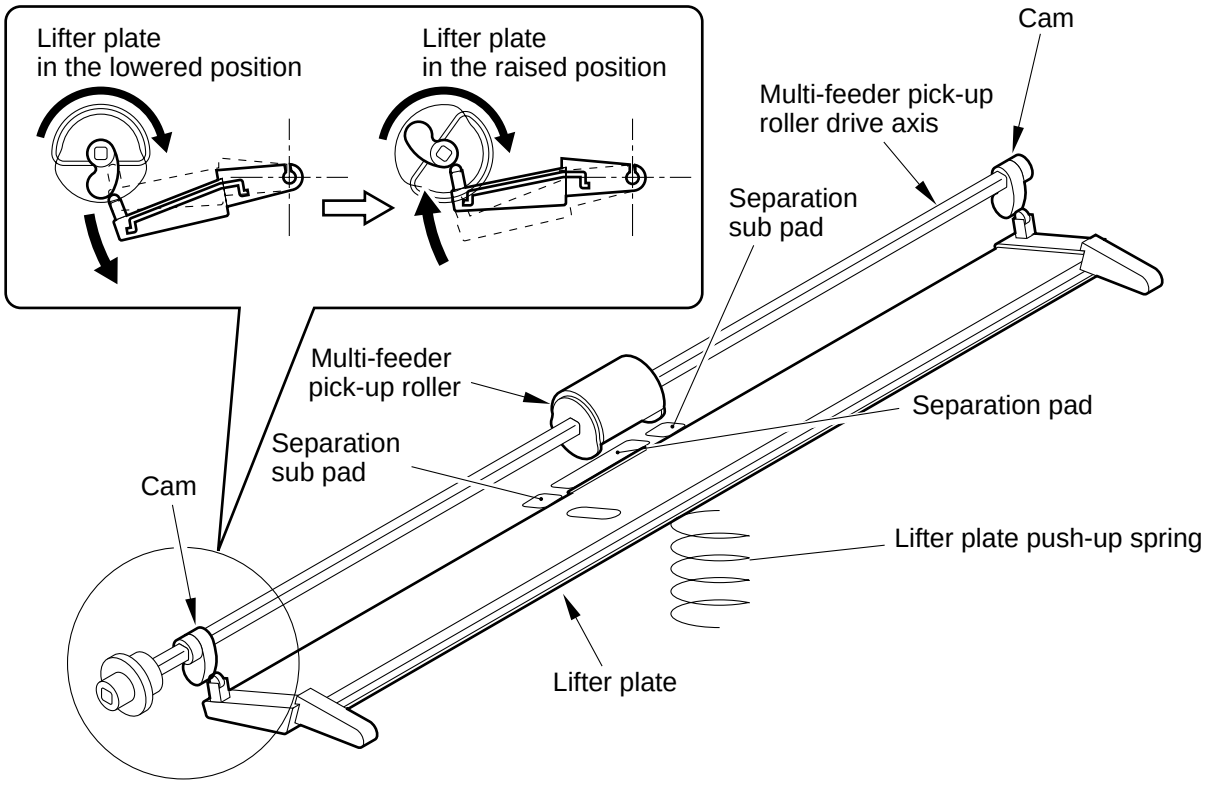


**Figure 7-402**


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### 2. Multi-feeder pick-up drive mechanism

The multi-feeder pick-up roller is driven by the main motor, via the multi-feeder pick-up drive assembly gear. The pick-up timing is controlled by multi-feeder pick-up solenoid drive signal (SL302D), which is sent from the DC controller PCB.

The construction of the multi-feeder pick-up drive assembly is illustrated in Figure 7-403.

When the main motor rotates, the pick-up drive relay gear rotates simultaneously.

When the multi-feeder pick-up solenoid drive signal (SL302D*) is output from the DC controller PCB, and the solenoid comes ON, the cogless gear is rotated slightly by the spring tension. This causes the rotation to be transmitted to multi-feeder pick-up drive gear, and the pick-up roller rotates.

When the pick-up roller has rotated once, the cogless gear's cogless part, and the pick-up drive relay gear position match, therefore drive is no longer transmitted to the Multi-feeder drive axis gear and the pick-up roller rotation stops.

## C. Multi-feeder retry pick-up

When paper is not picked-up even when the multi-feeder pick-up roller is rotating, retry pick-up operation occurs.

The DC controller PCB's CPU counts the time from when the multi-feeder pick-up solenoid (SL301) comes ON. If the registration sensor (PS302) cannot detect the paper's leading edge within a designated period of time, the pick-up solenoid comes ON again and the pick-up operation is retried. Even when the retry pick-up is actuated again, if the pick-up sensor does not detect the paper's leading edge within the specified period of time, the retry operation is tried for a second time. If, during this second pick-up retry paper does not arrive at the registration sensor, it judges there is a jam, and a jam message is displayed on the control panel's display.

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## D. Multi-feeder paper size setting

The multi-feeder paper size setting differs, depending on how the multi-feeder is used.

a) When using the multi-feeder with a fixed paper size.
b) When resetting the size when replenishing the multi-feeders paper.

For a), designate the paper size by:

Registration/Setting key > 01 Data registration > 05 Printer settings > 06 Name stack size “ON”.

If 06 Name stack size “OFF” is selected, the size needs to be set as for the above b).

In this case, set the paper size when setting paper in the multi-feeder.

In both cases a) and b), if the paper size setting and the size of the paper in the multi-feeder are not the same, the “PAPER SIZE SETTING IS WRONG” message will be displayed on the control panel.

In addition, the above methods a) and b) are the only 2 methods available when printing fax reception data on multi-feeder pick-up paper.


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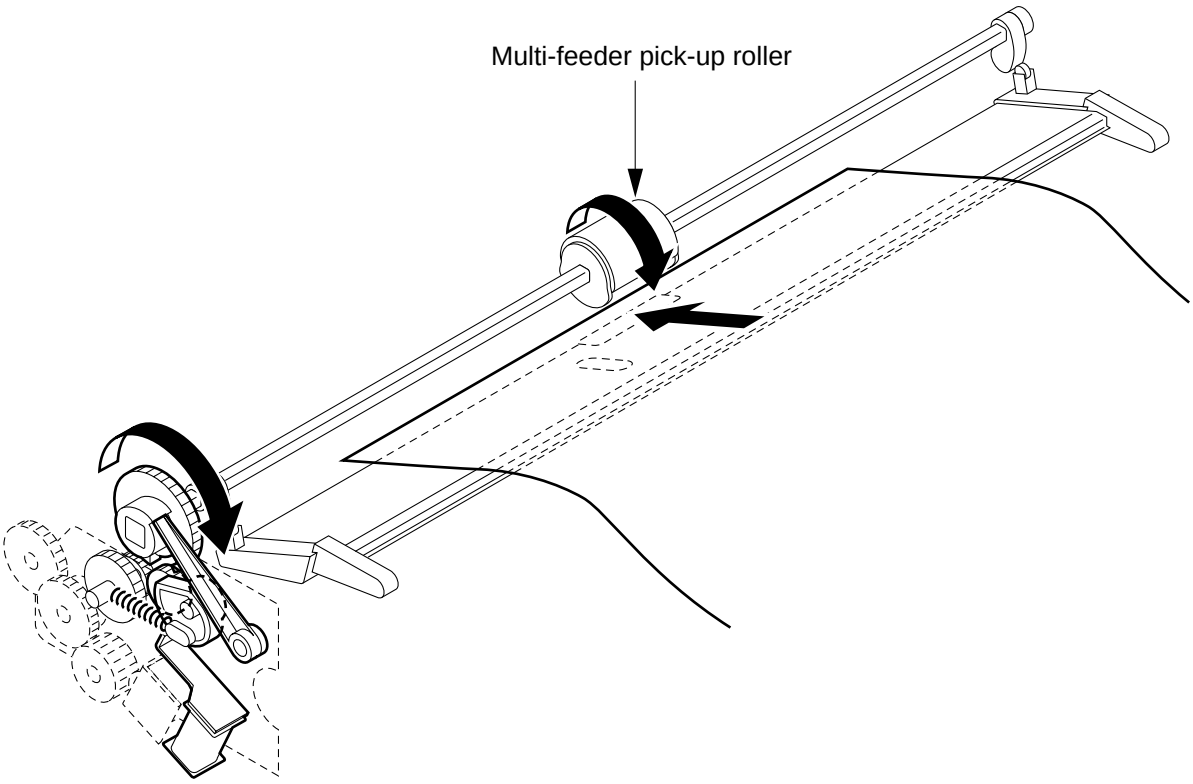
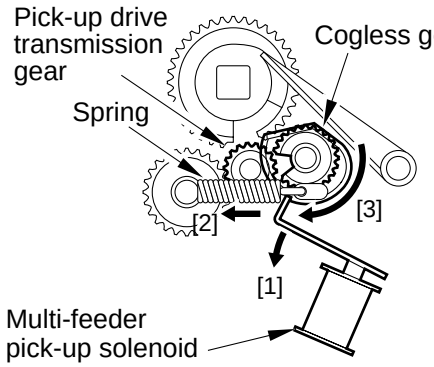
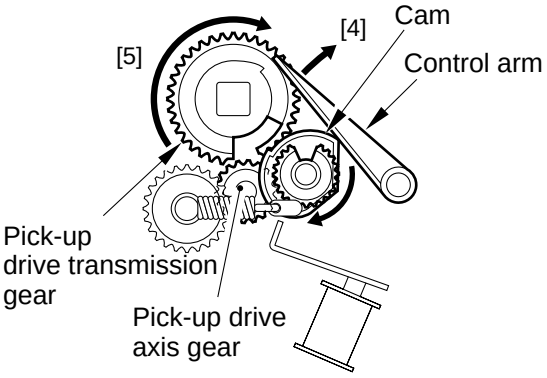



[1] The pick-up solenoid comes into operation, the cogless gear lock is released.

[2] When the lock is released, the cogless gear rotates a little due to the spring's power.

[3] Drive from the motor is transmitted to the cogless gear causing it to begin rotation.




[4] Due to the cogless gear cam pushing up the control arm, the pick-up roller drive gear lock is released.

[5] The pick-up roller drive gear rotates a small amount, and the drive is transmitted from the motor causing rotation to begin.

**Figure 7-403**



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# V. PAPER FEEDING OPERATION

## A. Paper leading edge detection

The paper sent from the pick-up assembly is sent to the transfer area by the registration clutch (CL302) rotation.

A sensor is installed in front of the transfer area which detects the leading edge of the paper sent from the registration roller. The DC controller PCB sends a vertical synchronizing signal (TOP*) to the image processor PCB when the paper leading edge sensor (PS301) detects the paper's leading edge.

A designated period of time after the image processor PCB receives the TOP* signal, it sends out a video signal (VDO*, VDO) which causes the image on the photosensitive drum and the paper's leading edge to coincide.

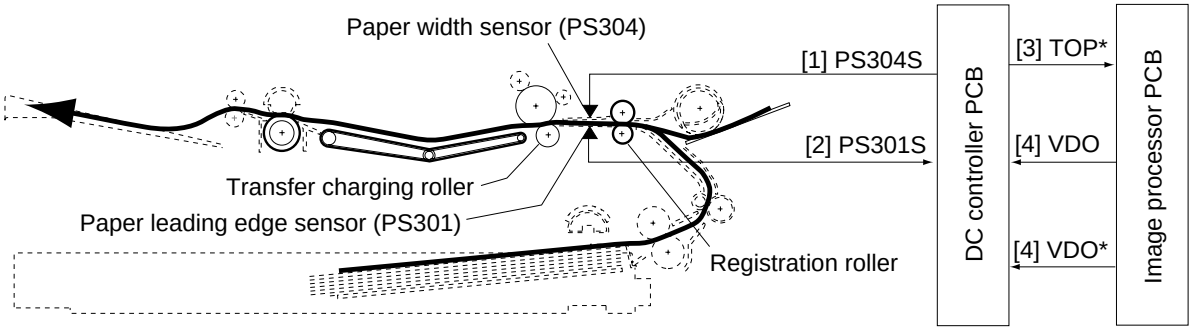
After this, the paper passes through the transfer, separation and fixing areas, and is then delivered onto the eject tray.

## B. Paper width detection

The unit's cassette size detection is judged by the position of the cassette paper size lever which the user has set in the unit.

In the event of the paper size (width) in the cassette and the setting of the paper size lever differing from each other, the paper size sensor (PS304) detects this and a paper width detection signal (PS304S) will be sent to the DC controller PCB which will stop the feeding operation.

Due to this, even if smaller paper (widthwise) than set by the cassette size lever is fed through, the toner developed on the photosensitive drum will not adhere to the edge of the transfer charging roller, therefore internal machine soiling caused by the toner is prevented.




[1] PS304S: Paper width detection signal
[2] PS301S: Paper leading edge detection signal
[3] TOP*: Horizontal synchronized signal
[4] VDO/VDO*: Video signal

**Figure 7-501**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# VI. JAM DETECTION

## A. Overview

The unit is equipped with 4 jam sensors to detect the condition of the paper feeding.

In addition, the unit is equipped with one sensor to detect paper presence in the multi-feeder and one sensor to detect paper presence in the cassette.

In order to check the presence of paper and jams, the DC controller PCB's CPU (IC301) checks at pre-programmed check timing intervals whether there is paper in the sensor areas. When it is judged that a jam has occurred, the main motor is turned OFF, and a jam message is displayed on the control panel.

**Reference:**

When a jam occurs during memory copying, the images saved in the memory are completely erased, therefore it is necessary to copy the document again.

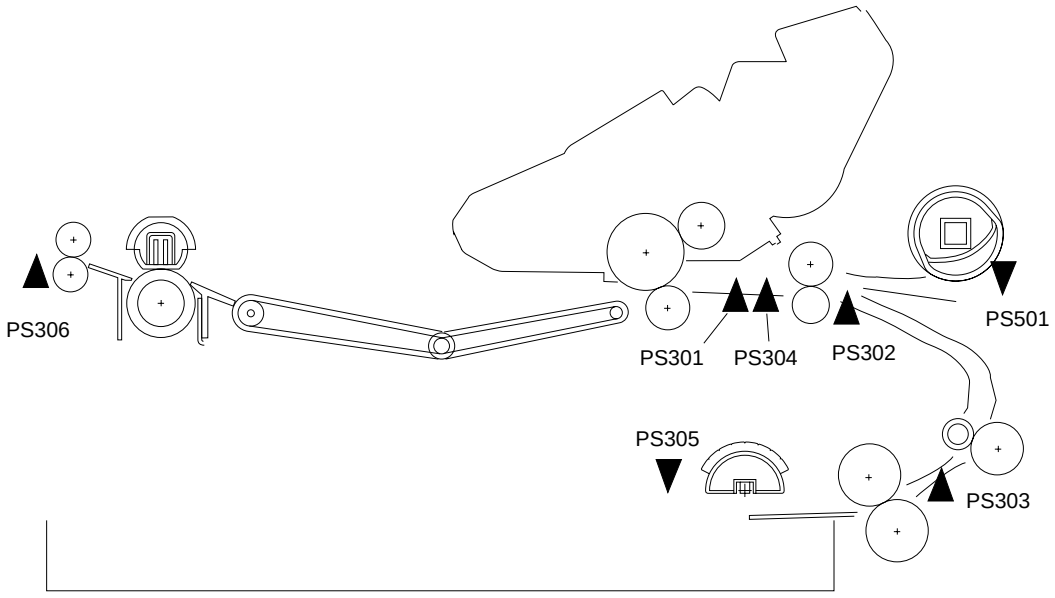


**Figure 7-601**

| Symbol | Name | Signal name | Jack number |
|---|---|---|---|
| PS301 | Paper leading edge sensor | PS301S | J306-2 |
| PS302 | Registration sensor | PS302S | J303-2 |
| PS303 | Pick-up sensor | PS303S | J303-5 |
| PS304 | Paper width sensor | PS304S | J306-5 |
| PS305 | Cassette paper sensor | PS305S | J306-8 |
| PS306 | Delivery sensor | PS306S | J308-5 |
| PS501 | Multi-feeder paper presence sensor | PS501S | J309-6 |

*1 Jack number on the DC controller PCB.

**Table 7-601**

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## B. Types of Jam

The DC controller PCB microprocessor (IC301) determines there is a jam in the following situations

a. Delay jam
The copy paper has not arrived in the sensor area within a stipulated period of time (not detected by the sensor).

b. Stationary jam
The paper has not left the sensor within a stipulated period of time after the sensor has detected the copy paper (the sensor has not turned OFF).

c. Residual paper jam
When power is turned on paper is left behind in the sensor area (the sensor detects copy paper).

## C. Jam sequence

### 1. Pick-up delay jam

■ **Detection by the pick-up sensor (PS303)**
At the time of cassette pick-up, when paper has not arrived at the pick-up sensor (PS303) within approx. 3 seconds after the pick-up solenoid (SL301) has been turned ON, the retry operation will take place. If, during the retry pick-up operation the pick-up sensor does not come ON within approx. 3 seconds after the pick-up solenoid comes ON, it is judged there is a delay jam.

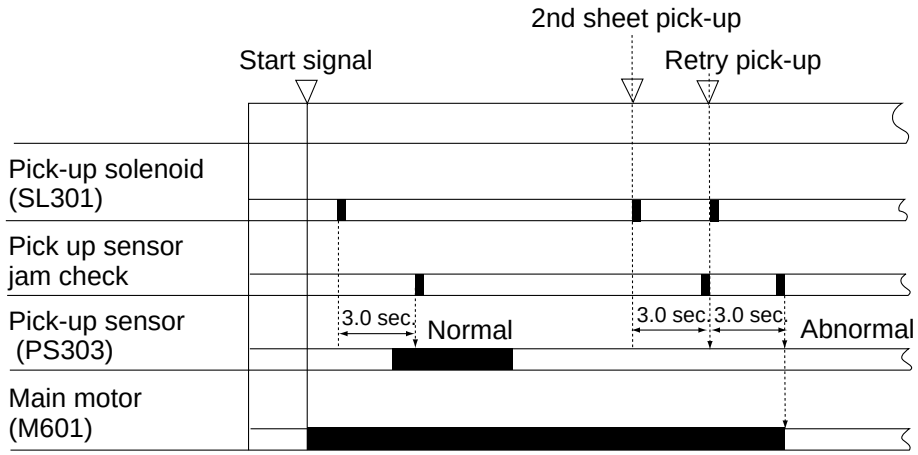


**Figure 7-602**


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## ■ Detection by the registration sensor (PS302)

The conditions for detection by the registration sensor differ from the time of the first sheet pick-up operation and the second and subsequent sheet pick-up in consecutive paper feed.

a. Delay jam at the time of the first sheet pick-up

When paper has not arrived at the registration sensor (PS302) within approx. 2.3 seconds after the pick-up sensor (PS303) has turned ON, it is judged that a delay jam has occurred.

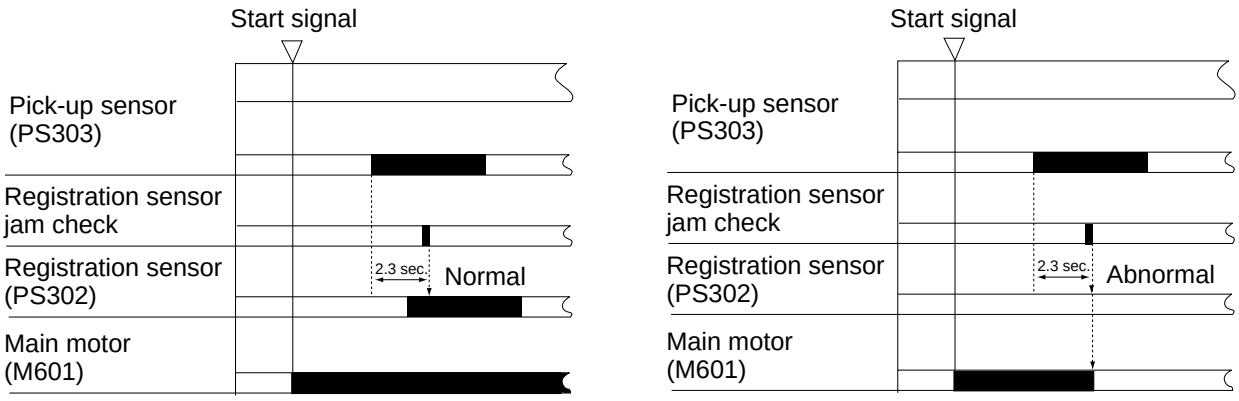


**Figure 7-603**



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b. Delay jam at the time of the second or subsequent sheet pick-up.

In this case there are 2 types of timing which monitor the feeding situation. Detection and jam judgement is done by both these timings.

- A jam is determined at the same timing as the previously explained delay jam at the time of the first sheet pick-up.
- Counting starts when the preceding sheet of paper has passed through the registration sensor (PS302), and if the leading edge of the next sheet of paper has not arrived at the registration sensor (PS302) within approx. 2.0 seconds, it is judged that a delay jam has occurred.

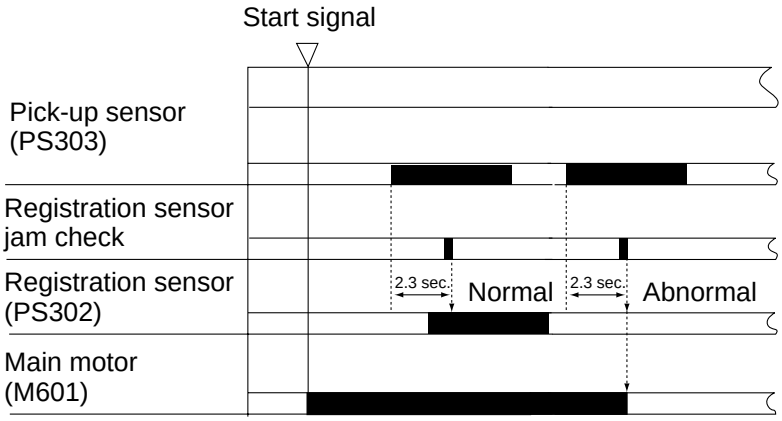


**Figure 7-604**

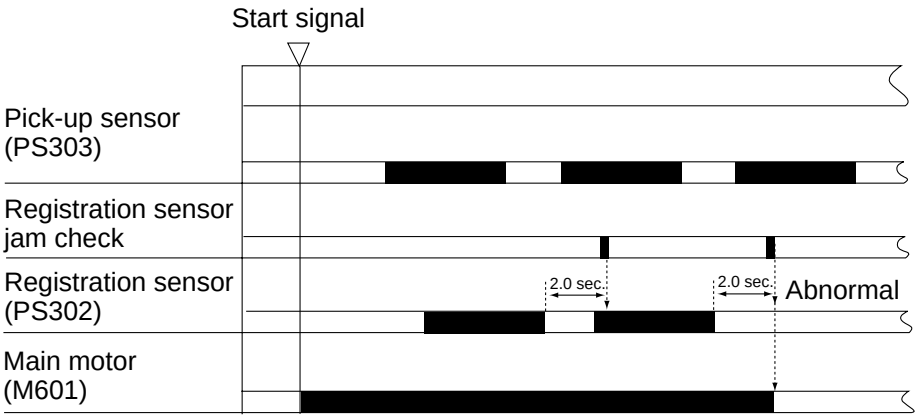


**Figure 7-605**


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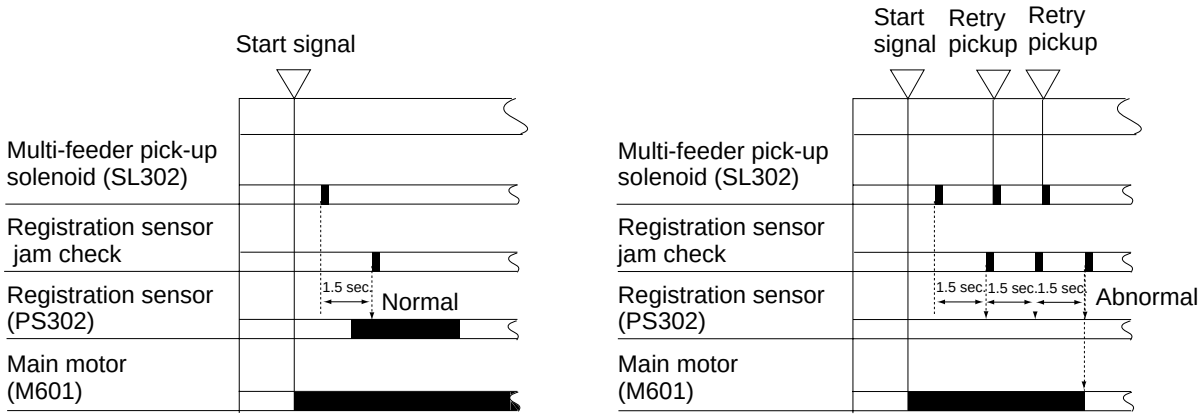
## 2. Pick-up delay jam (in the case of multi-feeder pick-up)

The pick-up from the multi-feeder is monitored by the registration sensor (PS302)

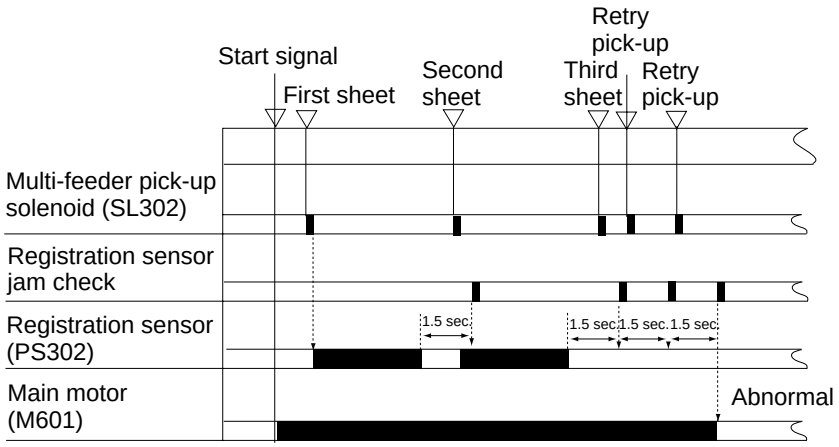
The timer count begins after the multi-feeder pick-up solenoid (SL302) has come ON, or, in the case he second sheet during multiple sheet continuous pick-up, after the paper sheet previously picked up has passed through the registration sensor. If paper has not arrived at the registration sensor approx.1.5 seconds from the count beginning, a retry pick-up takes place.

After the retry pick-up solenoid has turned ON, the timer count begins again, if paper has not arrived at the registration sensor within approx.1.5 seconds, the retry pick-up takes place once again. If paper has not arrived at the registration sensor within approx.1.5 seconds after the second retry pick-up timer count begins, it is judged that a delay jam has occurred.




Jam detection sequence for 1 sheet pick-up

**Figure 7-606**




Jam detection sequence for multiple sheet pick-up

**Figure 7-607**



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### 3. Registration sensor stationary jam (for cassette pick-up)

A registration sensor (PS302) stationary jam is only detected when continuous multiple sheet pick-up takes place.

At the time of the following sheet pick-up, the jam detection starts within approx. 3.0 seconds after the pick-up sensor (PS303) has turned ON (the following sheet leading edge is in a position of approx. 10mm in front of the vertical path roller).

If approx. 2.5 seconds has passed, but the trailing edge of the preceding sheet has not left the registration sensor (PS302), the registration sensor judges a delay jam has occurred.

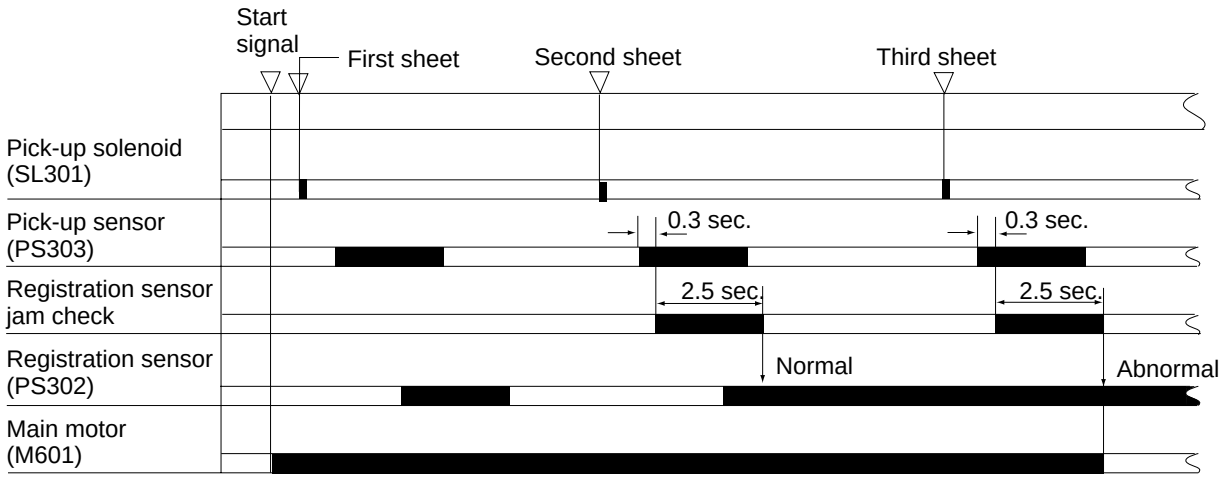


**Figure 7-608**


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### 4. Registration sensor stationary jam (for multi-feeder pick-up)

In the case of multi-feeder pick-up, if, after the multi-feeder pick-up solenoid (SL302) has come ON from the second or subsequent sheet pick-up, the preceding paper has not left the registration sensor (PS302) after approx. 1.0, it is judged that a registration sensor stationary jam has occurred.

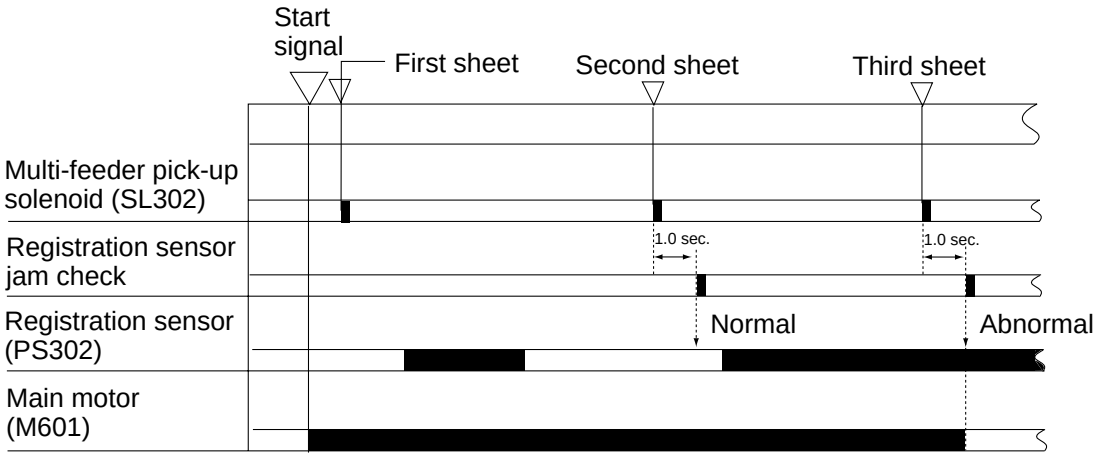


**Figure 7-609**

### 5. Paper leading edge sensor delay jam (for cassette pick-up)

If paper has not arrived at the leading edge sensor (PS301) approx. 1.2 seconds after the registration clutch (CL302) has come ON, it is judged a paper leading edge sensor jam has occurred.

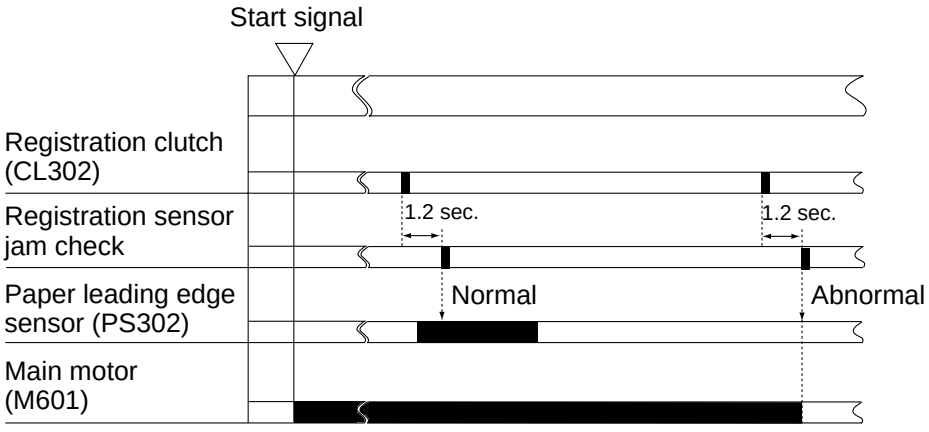


**Figure 7-610**

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## 6. Paper leading edge sensor delay jam (for multi-feeder pick-up)

In the case of multi-feeder pick-up, if paper has not arrived at the leading edge sensor (PS301) after approx. 1.2 seconds after the registration clutch (CL302) has come ON, a retry pick-up takes place. If paper has not arrived at the paper leading edge sensor approx. 1.2 seconds after the registration clutch operation for the retry pick-up has come ON again, yet another retry takes place. If paper still does not arrive at the sensor after the stipulated amount of time has passed, it is judged a paper leading edge sensor delay jam has occurred.

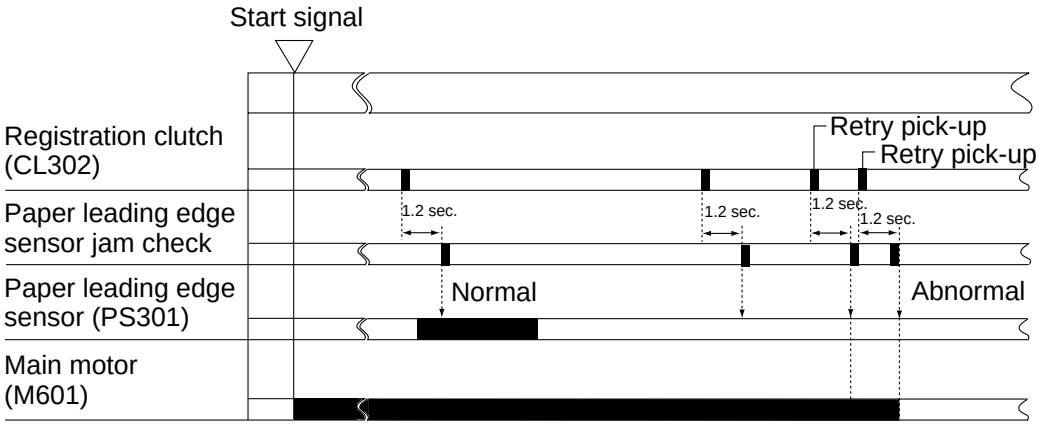


**Figure 7-611**

## 7. Paper leading edge sensor stationary jam

If 6.7 seconds passes after paper has arrived at the leading edge sensor (PS301) but has not passed through it, it is judged a paper leading edge sensor stationary jam has occurred.

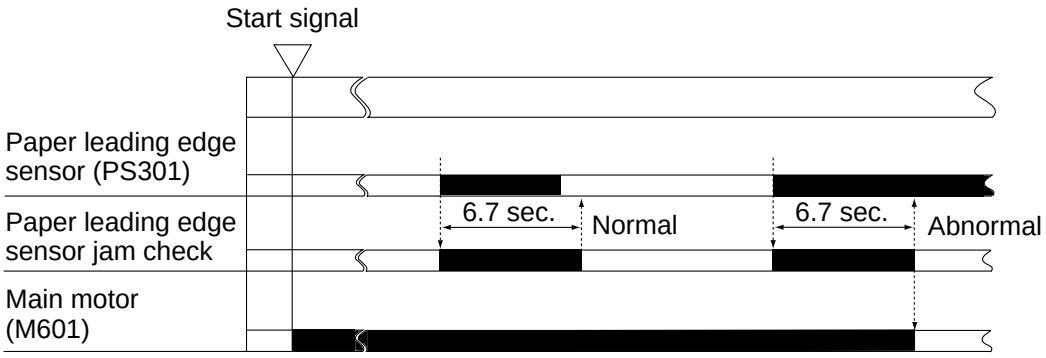


**Figure 7-612**


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## 8. Delivery sensor delay jam

If the delivery sensor (PS306) does not come ON after 5 seconds has passed since the paper leading edge sensor (PS301) has come ON, it is judged a delivery sensor delay jam has occurred.

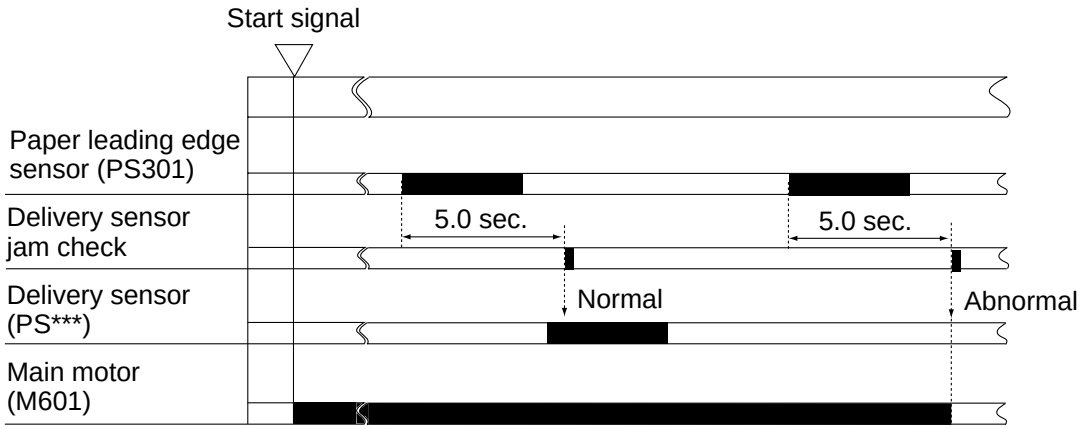


**Figure 7-613**

## 9. Delivery sensor stationary jam

If paper has not passed through the delivery sensor (PS306) approx. 5 seconds after the paper leading edge sensor (PS301) has come ON, it is judged there is a delivery sensor stationary jam.

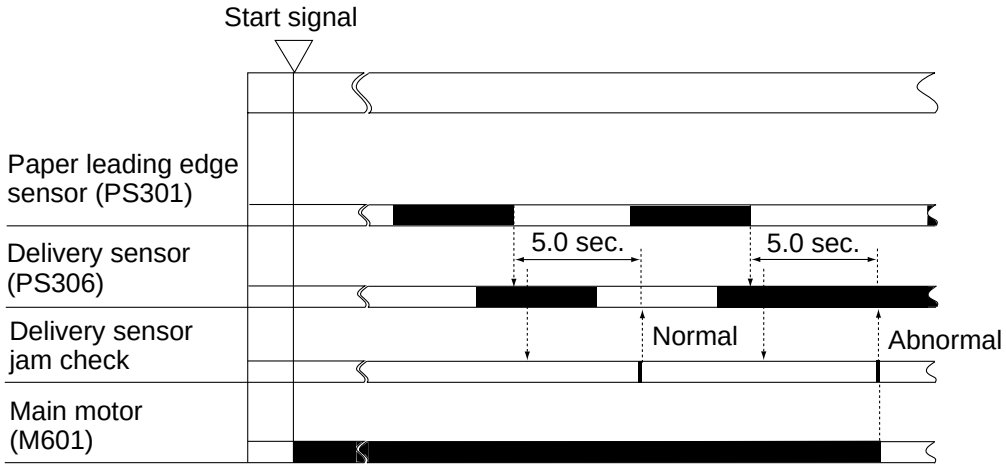


**Figure 7-614**



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## 10. Fixer wraparound jam

It is judged there is a fixer wraparound jam if paper has wrapped around the fixer, causing the delivery sensor to turn OFF within 1.4 seconds after the delivery sensor (PS306) has detected the paper leading edge.

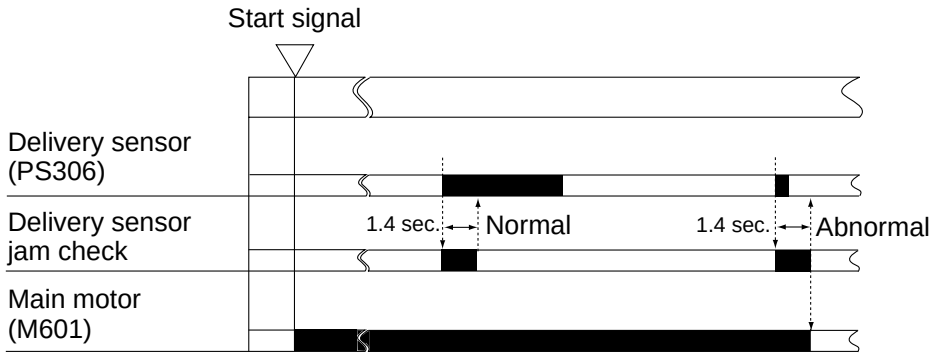


**Figure 7-615**

## 11. Door open jam.

If, during pick-up/feeding the front cover is opened, a door open jam will be detected and the feeding process immediately stopped.

Furthermore, if the pick-up vertical path assembly cover is opened during pick-up/feeding, a jam message will be displayed on the control panel, indicating there is a pick-up feeding malfunction.

## 12. Forced delivery operation

When the jams listed below occur during multiple copy printing, the sheet prior to the one which caused the jam (preceding sheet) will be left inside the machine. Therefore the main motor is forced to rotate causing the sheet to be delivered out of the machine.

Note: Even if residual paper is detected at the time of the power supply being turned on to the unit, automatic delivery does not take place.

**< Types of forced delivery jams >**

- Pick-up sensor delay jam
- Pick-up delay jam *
- Paper leading edge sensor delay jam*

* Jams at the time of cassette pick-up and multi-feeder pick-up.


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# VII. DISASSEMBLY, ASSEMBLY

This chapter describes mechanical features and operations as well as disassembly and assembly procedures.

The following precautions must be observed during disassembly and assembly work.

1. ⚠ For the sake of safety, disconnect the power plug before performing any disassembly or assembly work.
2. Unless otherwise specified, assembly work is performed in the reverse order of the disassembly operations.
3. Be sure to use the right type (diameter and length) or screws in the right places.
4. An inner-clip washer is used with one securing screw in the metal cover to prevent buildup of static electricity. Make sure to use this washer during assembly work.
5. In principal, the copier must not be operated when parts have been removed.
6. ⚠ Do not throw the drum cartridge into fire there is a danger of explosion.
7. In order to discharge any static electricity, touch the main units metal assembly before embarking on any work relating to the PCB. This will protect the PCB from any electrostatic damage.
8. When disassembling, do not remove screws which have been paint-locked.

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# A. Cassette feeding assembly

## 1. To remove the pick-up roller

The pick-up roller's attachment and removal is easier when the printer unit is removed from the main unit.

1) Rotate the pick-up roller's axis [1], unclip the roller collar tabs and remove the pick-up roller [2].

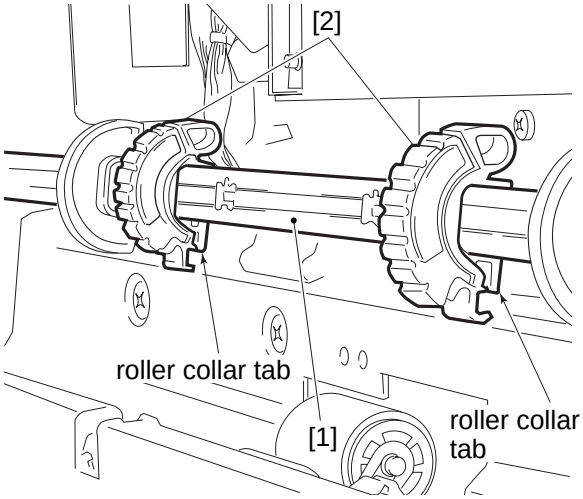


**Figure 7-701**

**Reference:**

The pick-up roller's installation position is indicated in Figure 7-702

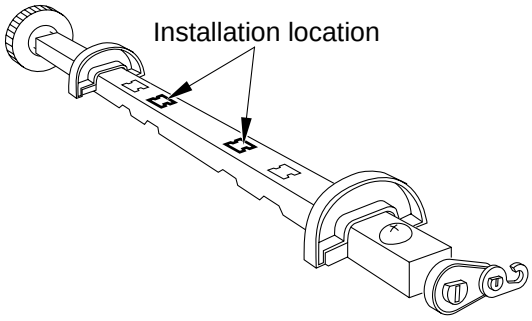


**Figure 7-702**


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## 2. To remove the Feeding / Separation rollers

It is possible to attach and remove the feeding / separation rollers even if the printer unit is not removed from the main unit.

1) Pull out and remove the main unit's cassette.

2) Slightly widen the lower right cover's front/rear support assembly and remove the lower right cover.

**Caution:**

Do not overly widen the support assembly.

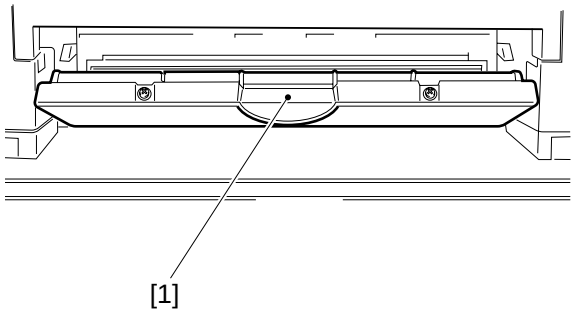


**Figure 7-703**

3) Unclip the roller collar tabs [2] and remove the feed roller [3] and separation roller [4]. The feed roller is removed from the cassette insertion opening and the separation roller is removed from the lower right side.

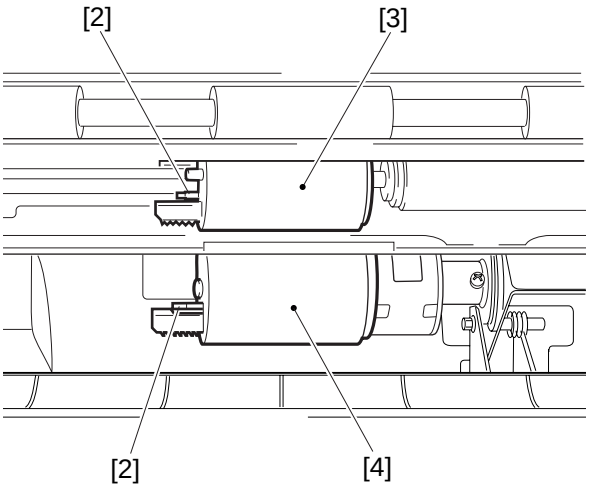


**Figure 7-704**



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### 3. To remove the pick-up unit

1) Remove the print unit from the main unit (refer to 9-19).

2) Remove the main drive unit (refer to 9-22).

3) Remove the installation screw [1] and tension spring [2], then remove the front print unit pressure lever [3].

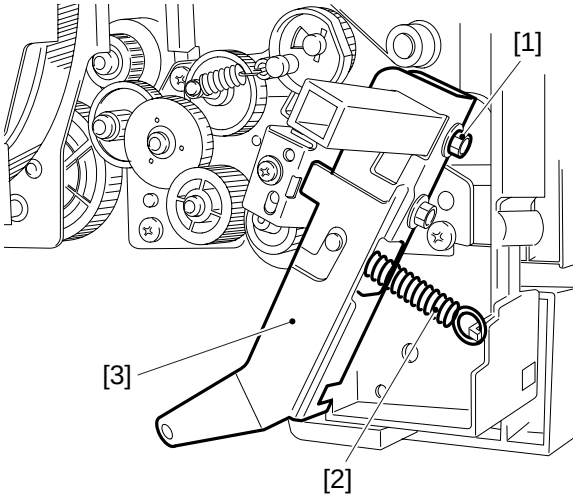


**Figure 7-705**

4) Remove the E-ring [4], then remove the drive relay gear [5].

5) Remove the 4 installation screws [6] and the multi-feeder pick-up solenoid [7] connector. Then remove the multi-feeder drive unit [8].

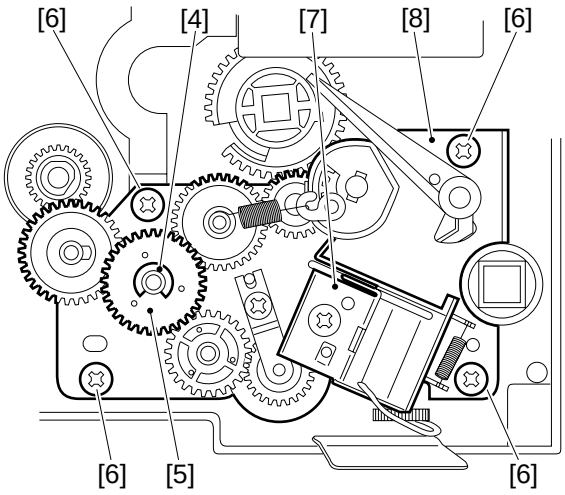


**Figure 7-706**


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6) Remove the E-ring [9], then remove the vertical path clutch [10] and the registration roller clutch [11] (is it not necessary to remove the clutch connectors).

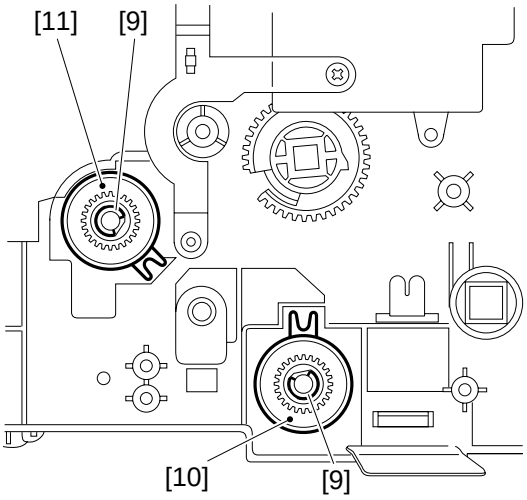


**Figure 7-707**

7) Remove the connector [12] and relay connector [13] from the DC controller PCB (printer unit rear side). Remove the disconnected cable from the cord guide.

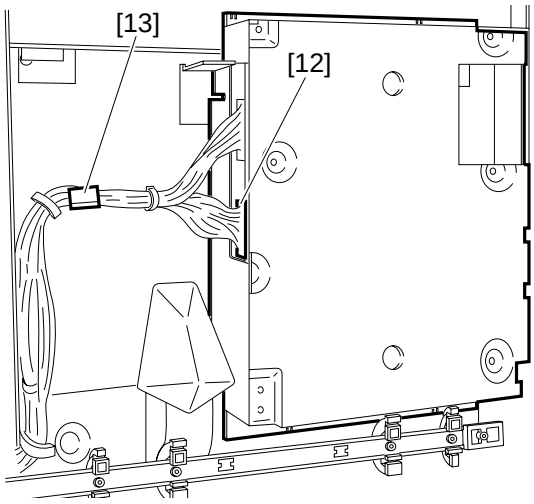


**Figure 7-708**

8) Remove the installation screw [14] and remove the earth plate spring [15].

9) Remove the installation screw [16], and then remove the printer unit support roller [17].

10) Remove the tension spring from the rear side printer unit pressure lever [18], then slightly slide the pressure lever together with the axis.

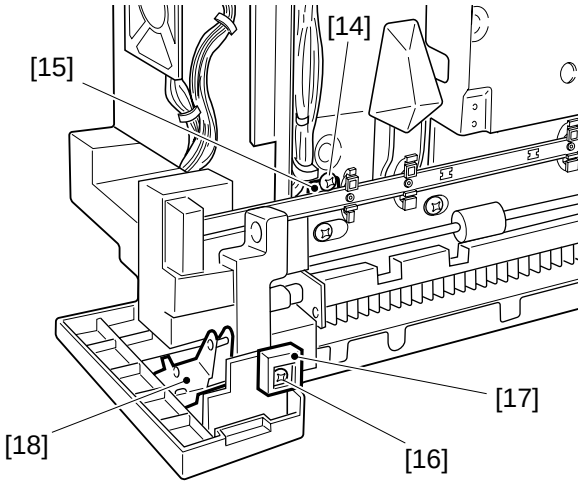


**Figure 7-709**

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11) Remove the 5 installation screws [19], and remove the pick-up unit.

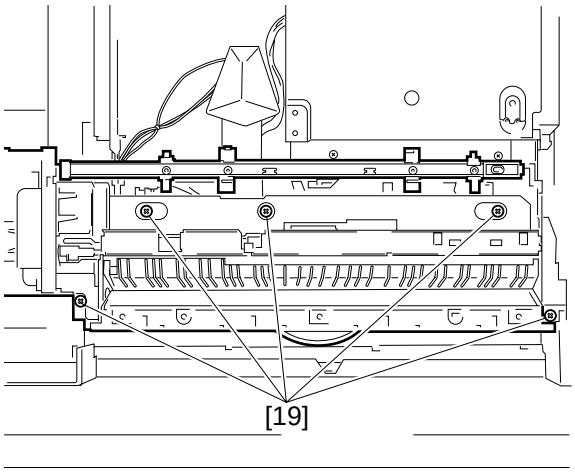


**Figure 7-710**

### 4. To remove the pick-up solenoid

1) Remove the 3 installation screws [1], and then remove the pick-up drive unit cover [2].
If the pressure lever roller [3] is secured by tape, etc., before removing the drive unit cover, re-installation of the drive unit cover will be made easier.

2) Remove the installation screw and then remove the pick-up solenoid.

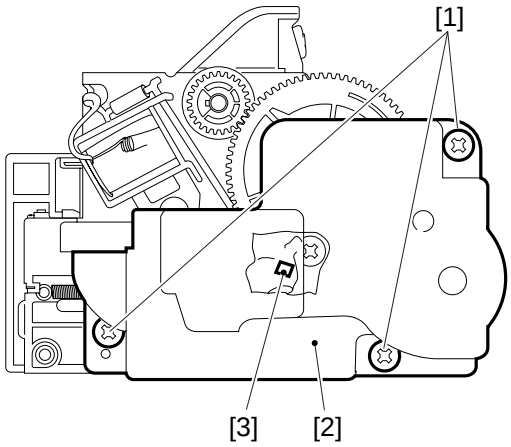


**Figure 7-711**


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## Construction of the pick-up assembly

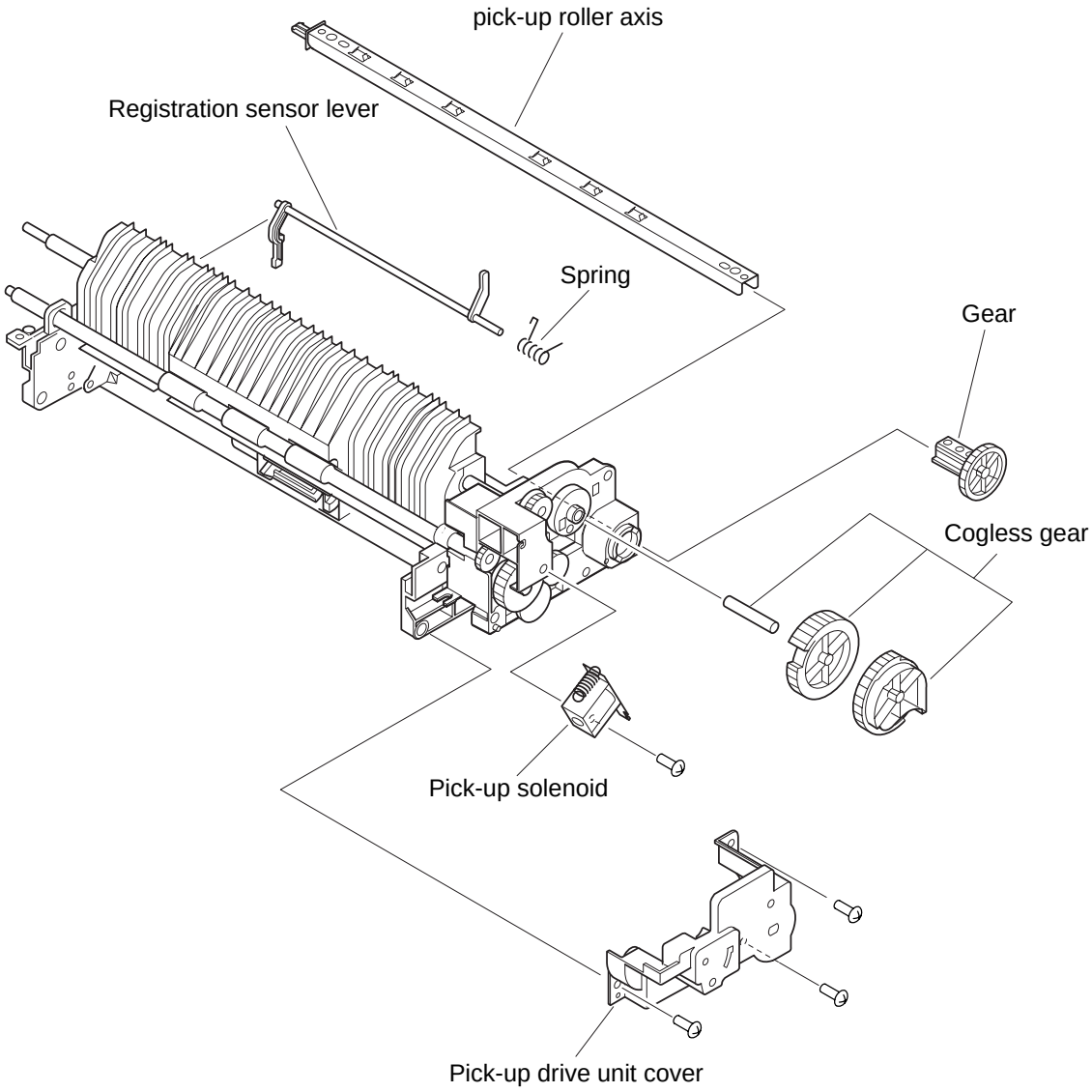


**Figure 7-712**

## Construction of the pick-up roller drive gear (Front View)

When installing the gear, refer to the diagram below and confirm the gear's positioning.

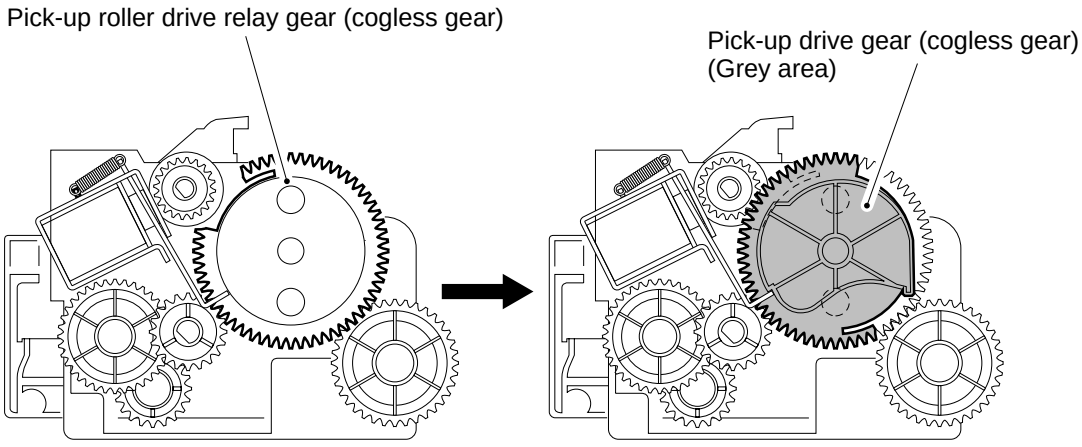


**Figure 7-713**

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## B. Multi-feeder assembly

### 1. To remove the multi-feeder pick-up roller

1) Remove the printer unit from the main unit ( refer to 9-19).

2) While pressing the tab, remove the release lever [1]. Then remove the 3 installation screws [2] and remove the drive unit cover [3].

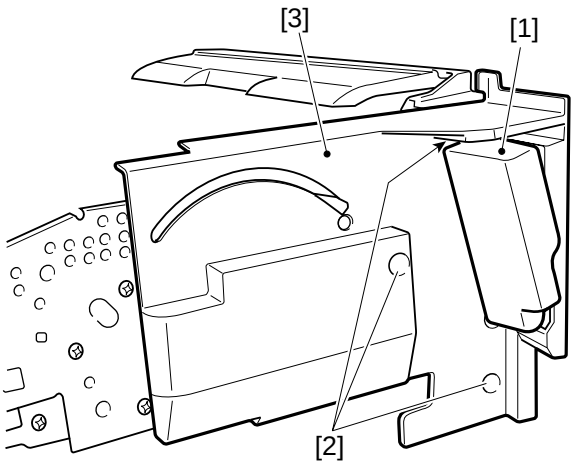


**Figure 7-714**

3) Remove the 3 installation screws [4], then remove the right cover [5].

**Caution:**

Take care not to damage the multi-feeder paper sensor lever.

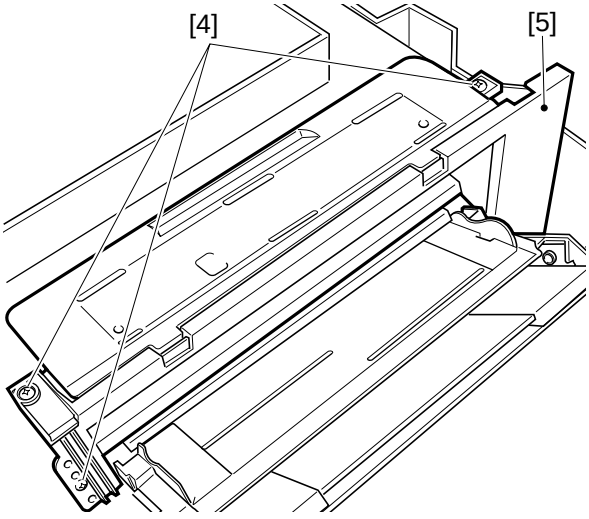


**Figure 7-715**


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4) Unclip the rear side tab [6], slide the roller collar [7] and remove the multi-feeder pick-up roller [8].

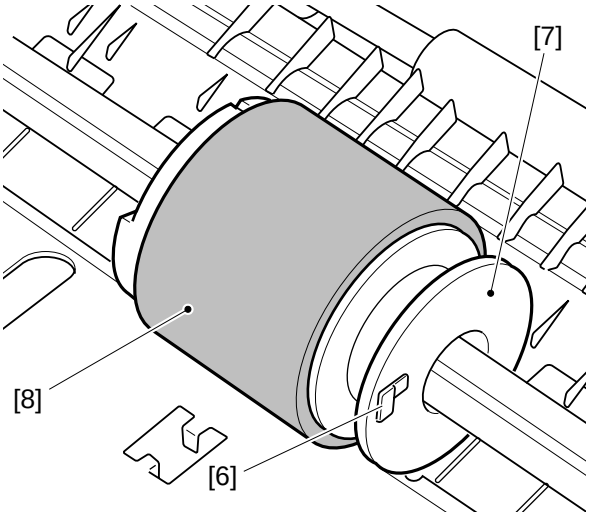


**Figure 7-716**

**2. To remove the separation pad**

1) Remove the printer unit from the main unit (Refer to 9-19).

2) Follow steps 3) to 5) of '3. To remove the pick-up unit', and remove the multi-feeder drive unit.

3) Remove the 3 installation screws and then remove the right cover.

4) Remove the 2 installation screws [1] and the connector [2], then remove the sensor PCB [3].

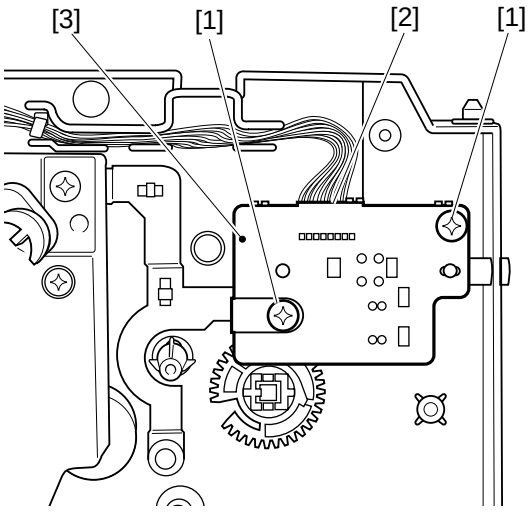


**Figure 7-717**



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5) Widen the tabs [4] and remove the multi-feeder pick-up axis drive gear [5].

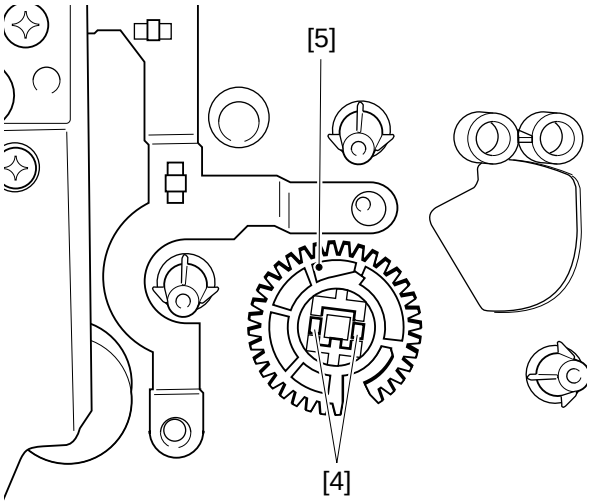


**Figure 7-718**

6) Unclip the tab [7] on the multi-feeder pick-up axis rear lifting plate pressure cam [6] and slide the cam to the inside.

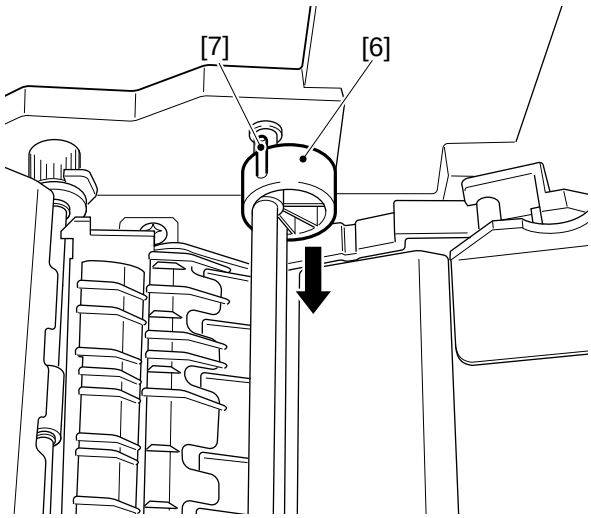


**Figure 7-719**

7) Slide the multi-feeder pick-up axis to the rear side and remove from the bearing.

8) Open the lifting plate, rotate the separation pad [8] and remove.

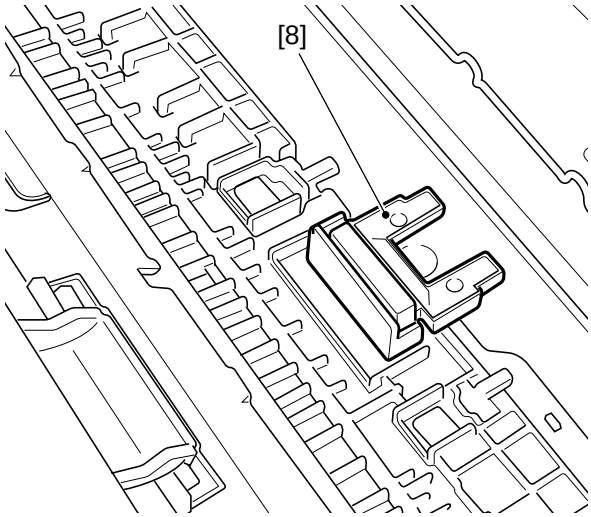


**Figure 7-720**


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## C. Registration roller assembly

1) Remove the printer unit from the main unit (refer to 9-19).

2) Remove the pick-up unit from the printer unit (refer to 7-26).

3) Open the registration roller guide plate [1], remove the 2 installation screws, then remove the transfer guide [3].

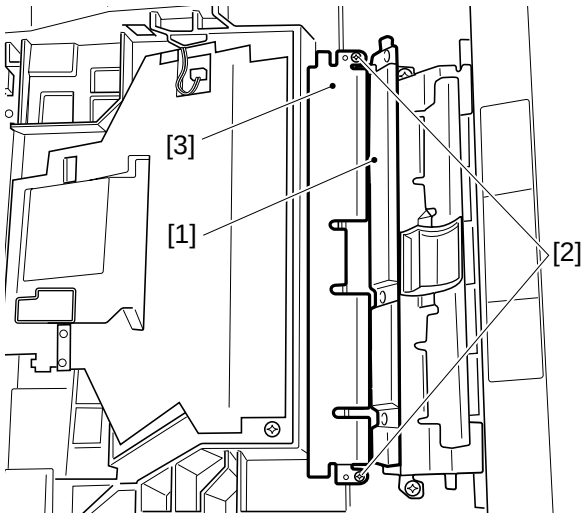


**Figure 7-721**

4) Remove the 4 installation screws [4], then remove the registration roller unit.

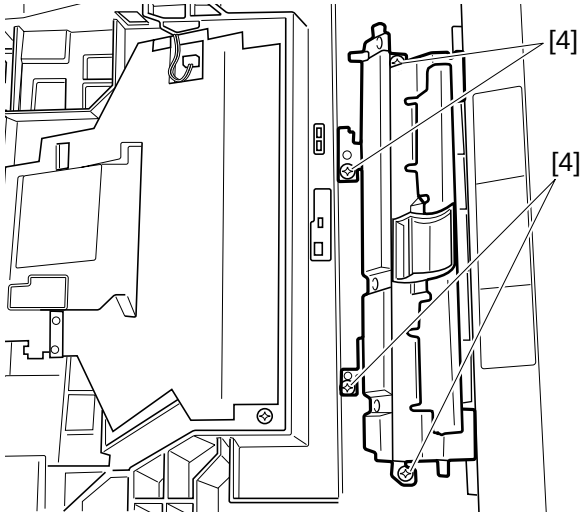


**Figure 7-722**

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## Construction of the registration roller assembly

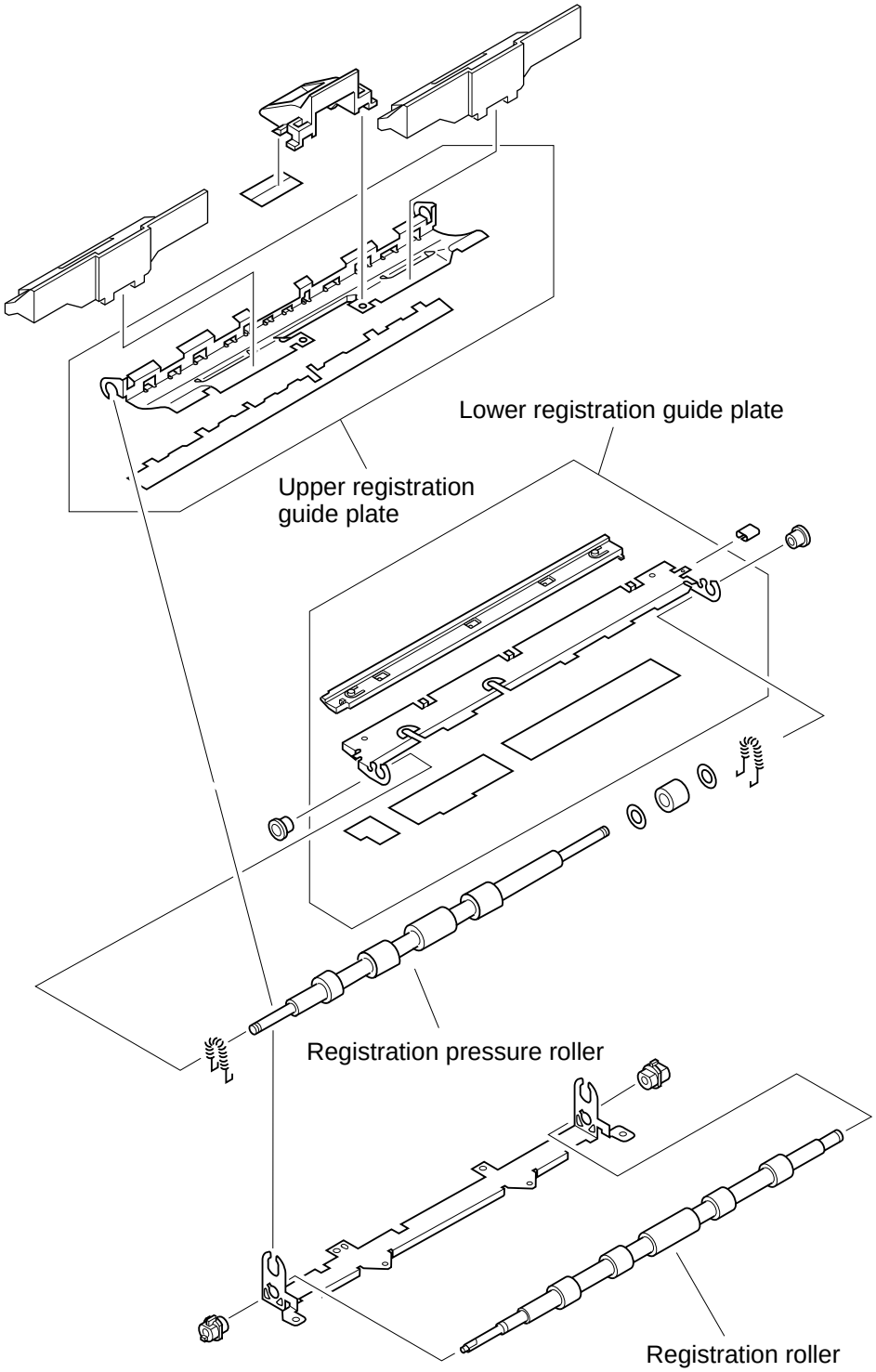


**Figure 7-723**


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# D. Feeder assembly

## 1. To remove the feeder assembly

1) Remove the printer unit from the main unit (refer to 9-19)

2) Remove the DC controller PCB (refer to 9-25)

3) Follow steps 3) to 5) of 'To remove the main motor' and remove the main drive assembly.

4) Remove the transfer charging roller.

5) Remove the fixing assembly (refer to 8-7).

6) Remove the 2 installation screws [1] and then remove the feeder assembly.

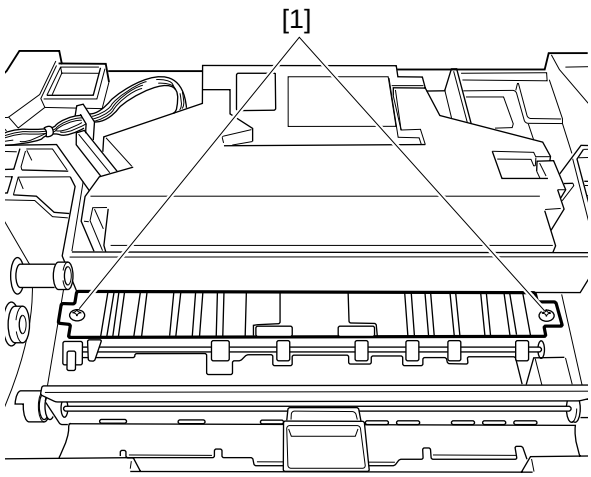


**Figure 7-724**

**Caution:**

Install the feeder unit before installing the DC controller PCB. If the feeder unit is installed after the DC controller PCB, there is the possibility that the high-voltage contact pins will become deformed.



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# CHAPTER 8

# FIXING SYSTEM

In this chapter, the basic operation, purpose and function of the fixing system, as well as the relationship between the electrical system and the mechanical system is summarized. An overview of each part's operation timing is also included.


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A. Overview .....8-1
B. Fixing pressure roller cleaning .....8-1
II. FIXING CONTROL.....8-3
A. Fixing temperature control .....8-3
B. Fixing heater safety mechanism .....8-5
C. Fixing assembly malfunction detector .....8-5
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A. Removing the fixing assembly .....8-7


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# I. OPERATIONAL OVERVIEW

## A. Overview

The main motor drives both the fixing assembly's pressure roller and the delivery roller. The paper, which has separated from the photosensitive drum, is then fed into the fixing assembly by means of the feeder belt. After the toner has been fixed to the paper by the fixing film and the pressure roller, it is fed out of the machine.

The paper, which is fed out of the fixing assembly is detected by the delivery sensor (PS306).

## B. Fixing pressure roller cleaning

Occasionally, problems such as smudges or blotches appear on the reverse side of the paper due to toner which has adhered to the fixing pressure roller. In order to eliminate these types of problems, this unit is equipped with a cleaning roller mechanism, which cleans the fixing pressure roller.

Figure 8-101 illustrates this mechanism's construction. The cleaning roller comes into contact with the fixing pressure roller. Rotation of the fixing pressure roller causes the cleaning roller to also rotate, and any clumps of toner which may have adhered to the surface of the pressure roller are thereby removed.

The fixing pressure rolling cleaning only takes place when the fixing pressure roller is rotating, and the cleaning mechanism only works during printing when the pressure roller is rotating.

Also, when the unit's print counter reaches 500 sheets, the rotation time is elongated. After every five hundredth copy, the length of time the pressure roller rotates is extended. Consequently, a more thorough cleaning of the fixing pressure roller is achieved, increasing the overall effectiveness of the cleaning process.

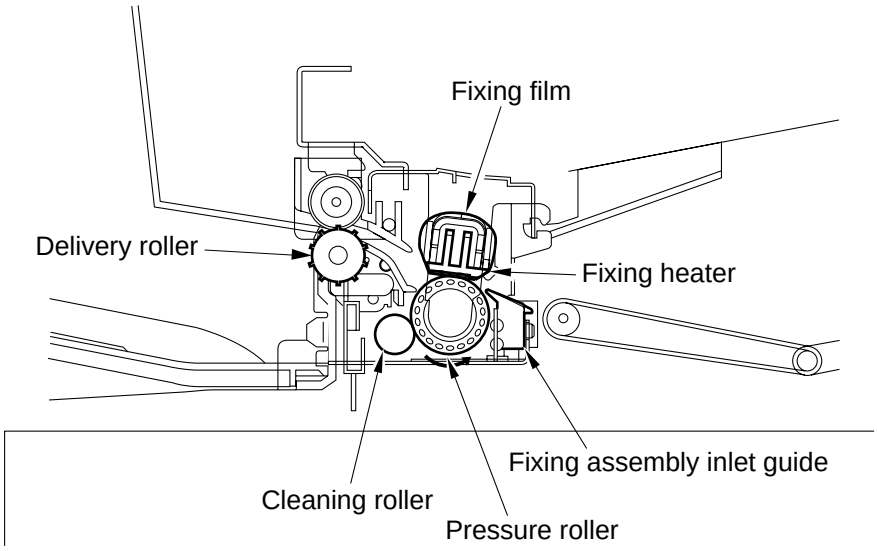


**Figure 8-101**



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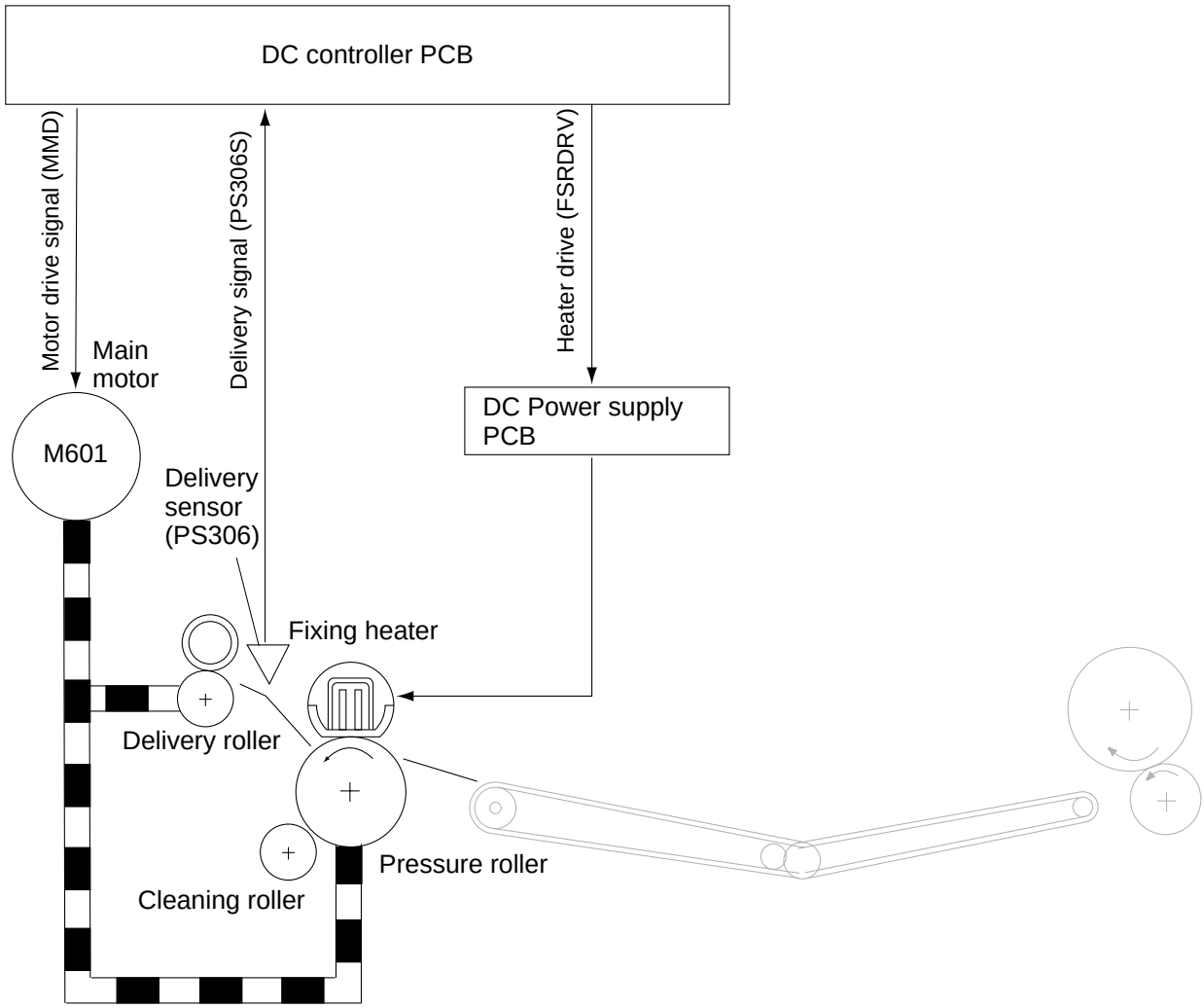


**Figure 8-102**


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# II. FIXING CONTROL

## A. Fixing temperature control

### 1. Overview

This unit's fixing heater uses two surface heaters, which are installed into one ceramic base. The heater heats up the fixing film.

The two surface heaters are equipped with ON/OFF switches, which keep the power consumption low.

The temperature of the fixing heater is monitored by a thermistor (TH1), which is located on top of the fixing heater. The DC controller PCB CPU (IC301), based on the fixing heater surface temperature signals, turns ON or OFF the fixing heater drive 1 signal (FSRDRV1) and the fixing heater drive 2 signal (FSRDRV2). This controls the fixing heater's surface temperature so it reaches the stipulated temperature.

During printing, the heater surface temperature setting is based on the following five conditions:

- When the fixing assembly is warming up, the temperature detects the initial temperature.
- Printing interval (first copy, intermittent copying, multiple copying)
- Paper size
- Resolution (600dpi, 1200dpi)
- Paper type, as selected in the user mode

| Paper type selection in user mode*1 | Resolution (dpi) | Target temperature (˚C) | |
|---|---|---|---|
| | | Print temperature control | Page interval temperature control |
| Bond paper | 600 | 190 to 175 | 175 to 145 |
| | 1200 | 170 to 155 | 155 to 125 |
| Plain paper<br>Special paper | 600 | 175 to 160 | 160 to 130 |
| | 1200 | 150 to 140 | 140 to 110 |
| Tracing paper | 600 | 160 to 145 | 145 to 115 |
| | 1200 | 137 to 127 | 130 to 100 |

*1: USER MODE > 05 PRINTER SETTING > 10 SELECT PAPER

**Table 8-201**



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**Reference:**

When the amount of time which has lapsed between the delivery sensor (PS306) detecting the end of one paper, and the next paper passing the through the paper leading edge sensor (PS301) is less than one second, the temperature control changes to the paper interval temperature control.

When compared to printing at 1200dpi equivalent, the feeding speed when printing at 600dpi is doubled, and so the fixing target temperature is high. A sudden rise in temperature of the fixing heater end may occur if small-sized paper is used when printing at 600dpi. In order to prevent this, the throughput is decreased by control of the fixing assemblys temperature.

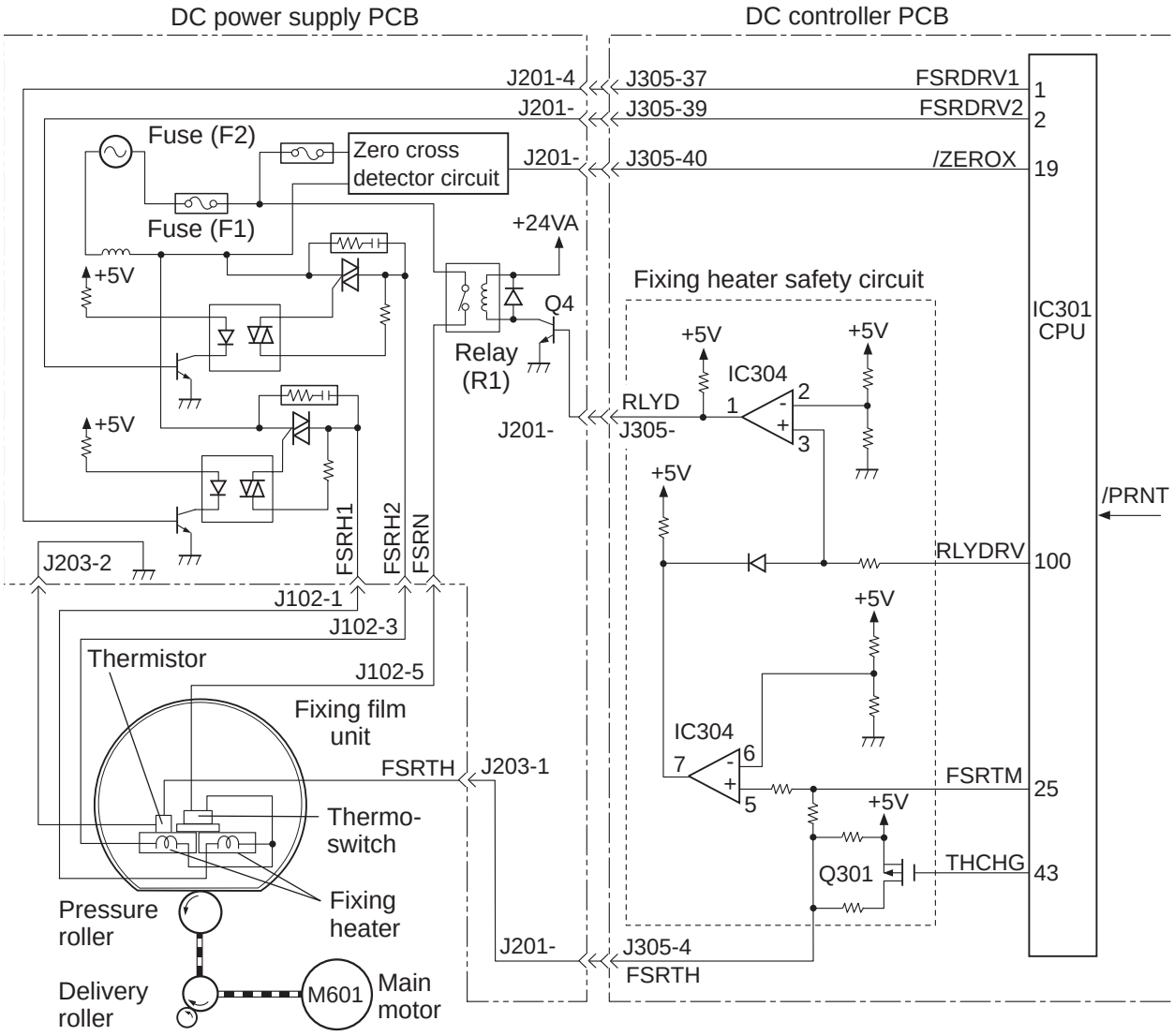


**Figure 8-201**


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## B. Fixing heater safety mechanism

This unit is equipped with a fixing heater safety circuit, located inside the DC controller PCB, which monitors the fixing temperature for abnormal rises in temperature. Should an abnormality occur, the output from the main circuit will switch the relay (RL1), located on the power supply PCB, to the OFF position, which cuts off the power supply to the fixing heater.

When, due to rises in the temperature of the fixing heater, the power voltage of the thermistor reaches 0.8V or higher (230 °C or higher), the output of the number 7 pin of the comparator (IC304) changes to “L”. When this happens, the number 1 pin of the IC304 changes to “L”, the Q4 changes to OFF, which causes the relay (RL1) to switch OFF.

Furthermore, the fixing assembly has been equipped with a thermoswitch (TSW1). Should the surface temperature of the thermoswitch reach approximately 240 °C, the thermoswitch switches OFF, and the power supply to the fixing heater is cut off.

## C. Fixing assembly malfunction detector

Should the CPU (IC301) of the DC control PCB detect any of the conditions from ‘a’ to ‘h’, described below, it judges the fixing heater is malfunctioning and the error message (# # 322) is displayed on the operation panel.

a. When 10 seconds have passed since the initial rotation began, and the thermistor’s temperature is below 100°C.
b. When 50 seconds have passed since the initial rotation began, and the thermistor’s temperature is 10°C or more below the target temperature.
c. When the fixing heater is switched on, and the temperature doesn’t rise over 15°C in less than 0.75 seconds.
d. When the thermistor’s temperature is less than 75°C during the print temperature control.
e. When the fixing heater’s temperature is 21 degrees or more higher than the target temperature for 30 continuous seconds.
f. When the fixing heater’s temperature rises to 221°C or over.
g. When there was no detection of the zero cross signal (temperature control reference signal) after turning on the power of the main unit.
h. When there was no detection of the zero cross signal while the heater was ON for 3 or more continuous seconds.

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# III. DISASSEMBLY, ASSEMBLY

This chapter describes mechanical features and operations as well as disassembly and assembly procedures.

The following precautions must be observed during disassembly and assembly work.

1. ⚠ For the sake of safety, disconnect the power plug before performing any disassembly or assembly work.
2. Unless otherwise specified, assembly work is performed in the reverse order of the disassembly operations.
3. Be sure to use the right type (diameter and length) or screws in the right places.
4. An inner-clip washer is used with one securing screw in the metal cover to prevent buildup of static electricity. Make sure to use this washer during assembly work.
5. In principal, the copier must not be operated when parts have been removed.
6. ⚠ Do not throw the drum cartridge into fire - there is a danger of explosion.
7. In order to discharge any static electricity, touch the main unit's metal assembly before embarking on any work relating to the PCB. This will protect the PCB from any electrostatic damage.
8. When disassembling, do not remove screws which have been paint-locked.


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## A. Removing the fixing assembly

1) Remove the two screws, and take off the lower left cover.

2) Open the front cover, remove the 5 screws [1], and then remove the delivery assembly cover.
When removing the delivery assembly cover, please place your hands in the positions shown in the diagram on the right, and then lift the cover up.

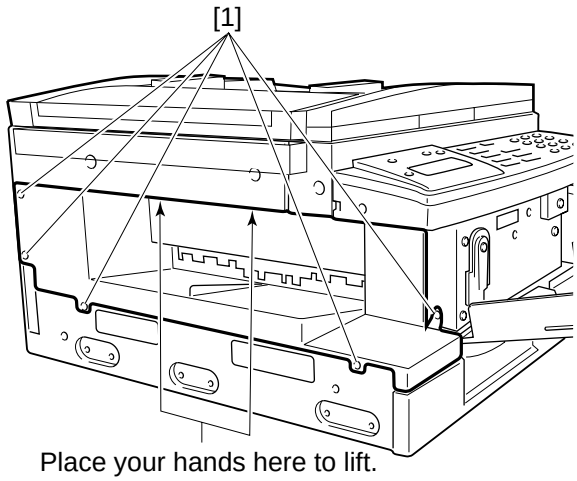


**Figure 8-301**

**Note:**

On the top of the delivery assembly cover, inside the area marked ▲, there is a tab. When the cover is lifted up, the tab is disconnected from the catch.
When replacing the cover, be sure to place the cover tab correctly in the “U” guide.

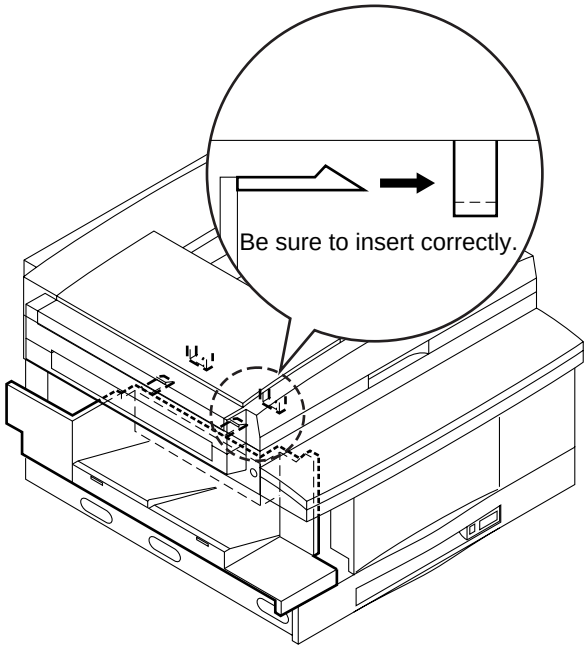


**Figure 8-302**

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3) Remove the two screws [2], and remove the grounding cable.

4) Remove the two screws [3], and remove the fixing assembly.

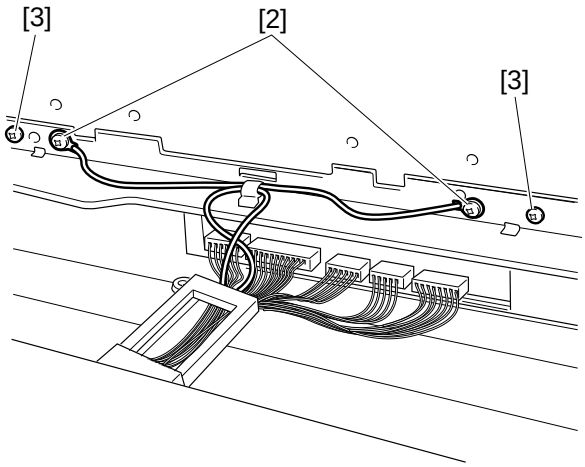


**Figure 8-303**


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# CHAPTER 9

# EXTERNAL / AUXILIARY MECHANISM

In this chapter, the operation, function and purpose of this unit's auxiliary control system as well as the relation between the electrical system and mechanical system is explained. Furthermore, an overview of each part's operation timing is explained.


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# I. CONTROL PANEL

## A. Overview

The structure of the control panel is displayed in the diagram below.

The control panel interface uses a single-line two-way serial interface.

The control panel is made up of two boards, and is controlled by the image processor PCB (IC15).

The liquid crystal display console is composed of 80 × 320dots.

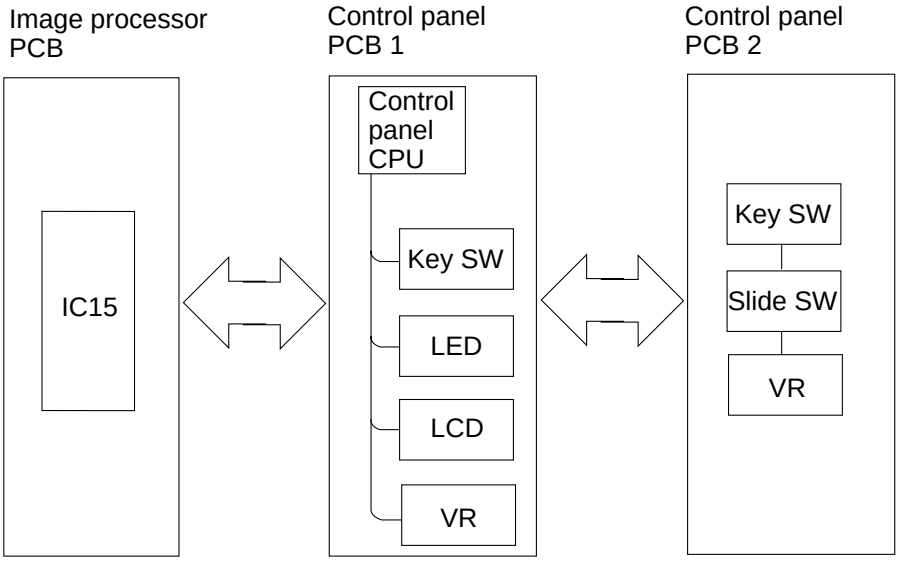


**Figure 9-101**



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# II. POWER SUPPLY

## A. Low-voltage power supply circuit

### 1. Low-voltage power supply circuit

The DC power supply of the main unit is generated by the DC power supply PCB.

The DC power supply PCB converts the input AC power supply into DC+24V, DC+12V, DC-12V, and DC+5V, and supplies each of the internal electrical loads.

An overview of the DC power supply is shown in the table below.

| Output voltage name | Output voltage value |
|---|---|
| +5V1 and +5V2 | +5.1V ± 3% |
| +12V | +12.0V ± 5% |
| -12V | -12.0V ± 5% |
| +24V1 and +24V2 | +24.0V ± 5% |

**Table 9-201**

Ratings for the fuses installed on the DC power supply PCB

| Electrical symbol | Rating |
|---|---|
| F1 | 15A 125V |
| F2 | 15A 125V |
| F3 | 5A 125V |
| F4 | 5A 125V |

**Table 9-202**


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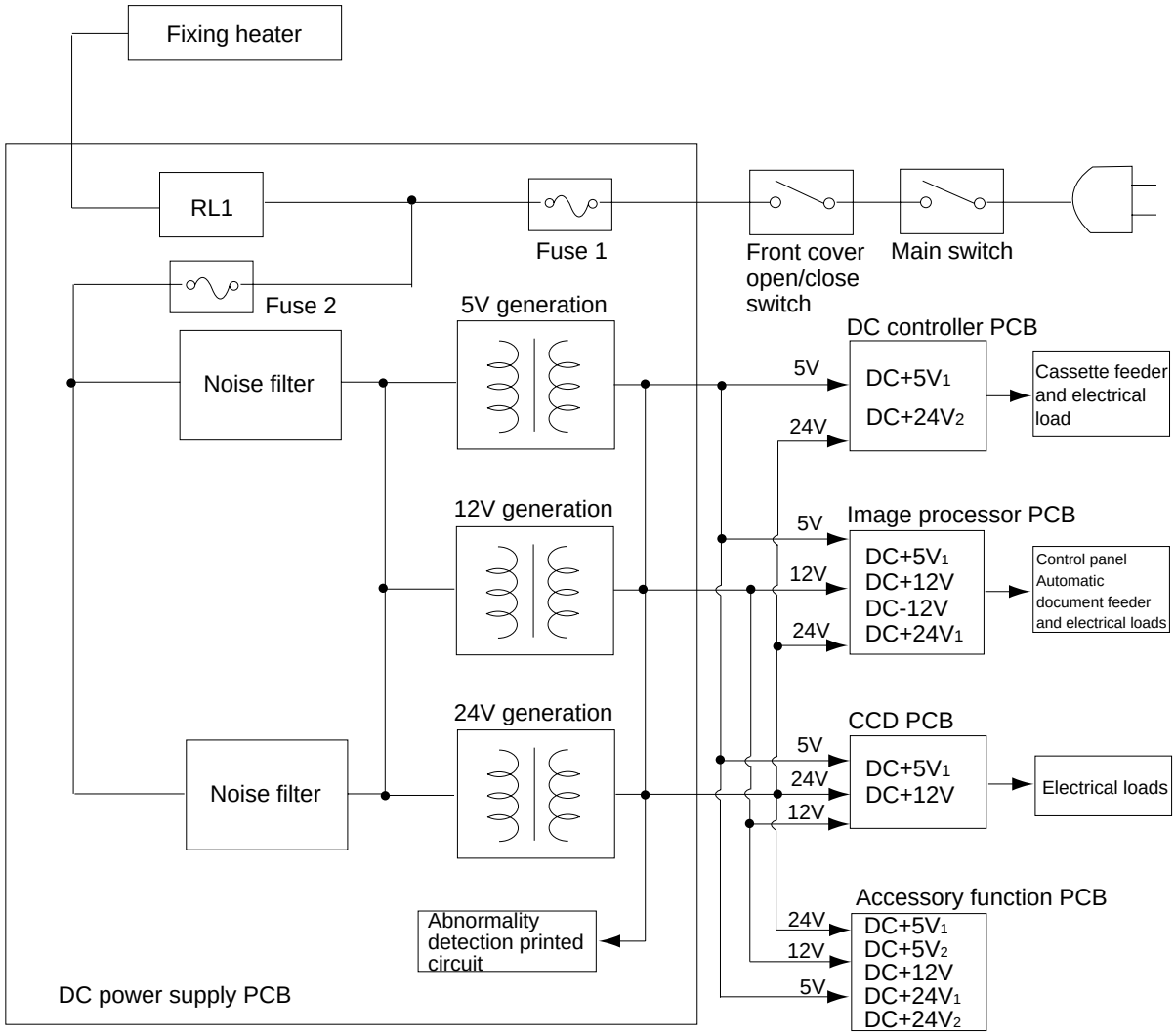


**Figure 9-201**



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### 2. Protection function

There is an overcurrent / overvoltage protective function located on the DC power supply PCB, which automatically interrupts the output voltage. This is to protect the DC power supply circuit from damage which may occur from problems such as a short in the electrical load, which can cause an overcurrent or overvoltage.

When the overcurrent / overvoltage protective function is activated, turn off the power supply switch, and once the electrical load trouble has been rectified, turn the power switch on again to restart.

Also, there are two fuses which have been built into the internal circuit. Should an overcurrent occur in the AC line, the fuses blow, and the flow of electricity is cut off.

## B. High voltage power supply circuit

The high voltage power supply circuit is built into the DC controller PCB.

At designated times, the DC controller PCB's CPU (IC301) emits instructions to generate the high voltages listed below.

- Primary charge roller applied voltage (AC voltage + DC positive voltage)
- Developing bias (AC voltage + DC negative voltage)
- Transfer charge applied (DC positive voltage as well as DE negative voltage)
- Static charge eliminator bias (DC negative voltage)

Please refer to chapter 6 "Image formation system" for more information regarding the control of each electrical load.


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# C. Energy save function control

## 1. Overview

This unit is equipped with an Energy Save function (referred to hereafter as ESS), which serves to reduce the energy consumption while the unit is in standby mode.

When the main unit has been in stand-by mode for the specified length of time, it switches over to the ESS function.

The settings for the activation times of the ESS function and the settings for the stand-by time can be registered in the user mode.

Stand-by time: from 3 to 30 minutes (factory setting: 3 minutes)

## 2. Control

The ESS is controlled by the image processor PCB.

The main unit stays in the stand-by mode until the ESS activation time specified in the user mode has elapsed. Then, the ESS control signal is emitted by the ESS controller assembly, which is located on the image processor PCB.

The DC controller PCB, the control panel and the electrical loads are controlled by this signal.

■ **Power consumption during stand-by mode**

Normal stand-by mode: 20W ± 10%

When the ESS is activated: approximately 14W

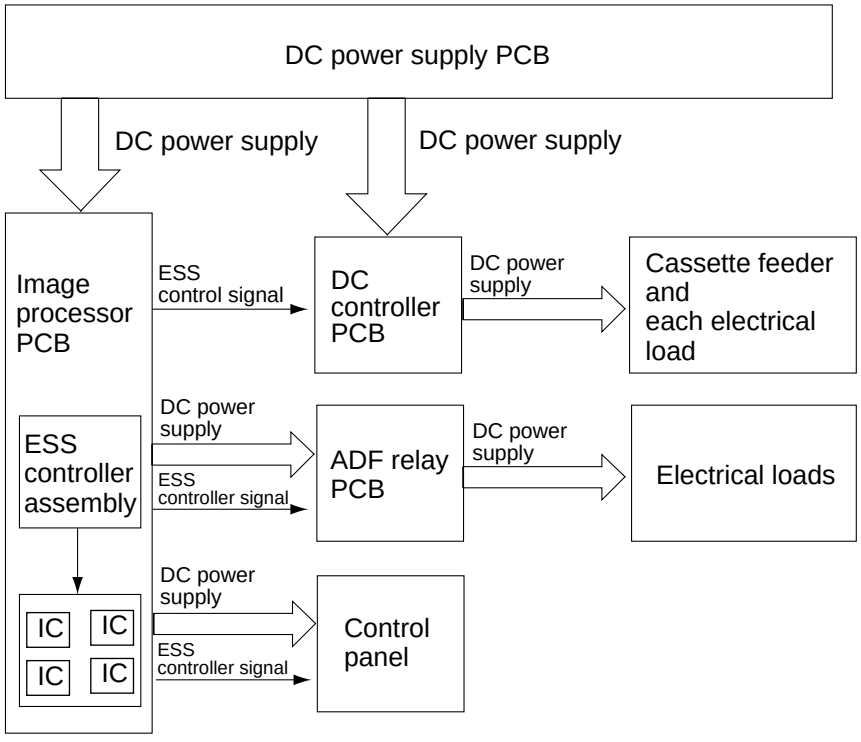


**Figure 9-202**



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## 3. Operation

When the ESS function is activated, all of the LED lights on the main unit's control panel, except the Energy Saver Key, are extinguished.

If any of the conditions listed below exist, then the ESS mode is not activated.

- The Energy Save mode has not been registered in the user mode.
- When the paper-out light, the jam light, the toner-out light, a service error or other error lights are on.
- When there are image data stored in the image memory.
- When there is a document in the ADF.

To turn off the ESS mode, press the Energy Saver Key. If any of the situations below occur, the unit will automatically turn off the ESS mode.

- A document is placed in the ADF.
- A fax is received (for those machines fitted with the fax function).
- The phone is taken off the hook (for those machines fitted with the fax function).
- The pre-set report output time has arrived (for those machines fitted with the fax function).
- The pre-set timer alarm time has arrived (for those machines fitted with the fax function).


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# III. FAN

## A. Rotation control mechanism

This unit has been equipped with an exhaust fan motor (FM301), located at the rear of the printer assembly. The fan motor Hall element has a built-in 2 phase 4 pole DC brushless motor, and is integrated with the motor drive circuit.

The DC controller PCB's CPU (IC301) controls the rotation of the fan motor.

When the power switch of the main unit is turned ON, the DC controller PCB's CPU (IC301) sends out the half-speed rotation signal (HALFFAM*) "0". This activates the fan motor at half-speed rotation.

When the main unit starts printing, once the fixing assembly's temperature has reached the target temperature (160ÞC), the CPU (IC301) sends out the half-speed rotation signal (HALFFAM*) "1". This activates the fan motor drive signal (FAMON), which in turn raises the electrical voltage to the full speed levels, and full speed rotation of the fan begins.

The fan continues at full speed rotation until printing is finished. Then, the main motor (M601) stops and it powers down to half-speed 30 seconds after the printing operation is completed.

Should there be a problem with the CPU (IC301) for any reason, and the fan motor does not rotate according to the set timings, the fan motor lock detector signal (FAM-LOCK) detects this, and outputs an error code (##0325).

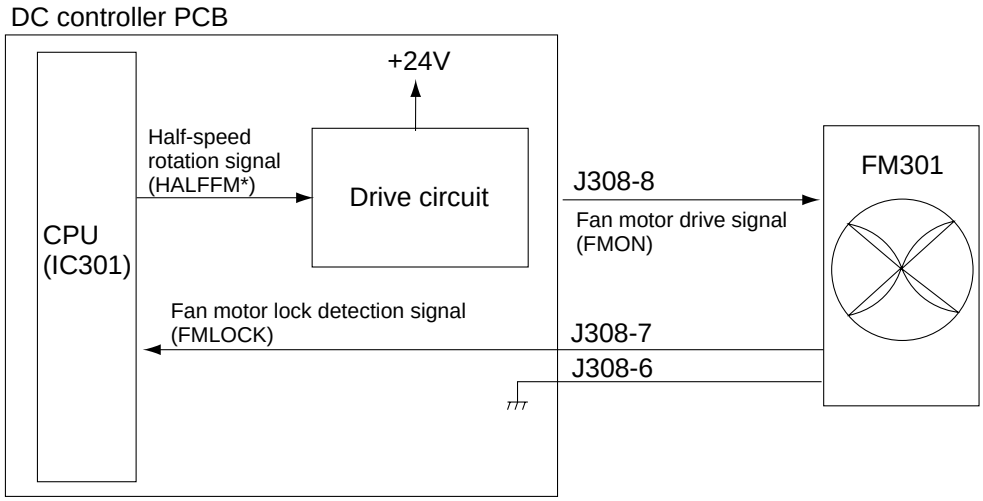


**Figure 9-301**



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# IV. BACK-UP BATTERY

## A. Back-up function

### 1. Overview

Should there be a power failure, or should the power supply switch be turned off, the image processor PCB of the main unit has been equipped with a data back-up lithium battery (BAT2) and a vanadium lithium secondary battery (BAT1), which are part of the data back-up function. For more information about the types of data which can be backed up, please refer to page 9-12.

**Caution:**

The lithium battery and the vanadium lithium secondary battery are made up of lithium and organic solvents, which are extremely combustible materials. Should these batteries be put in a fire, an explosion or very intense fire may occur. Also, the liquids inside the batteries may damage the skin. For these reasons, please handle these batteries with sufficient care.
When the batteries have been completely used up dispose of them in an appropriate manner (dispose them separately from normal garbage).

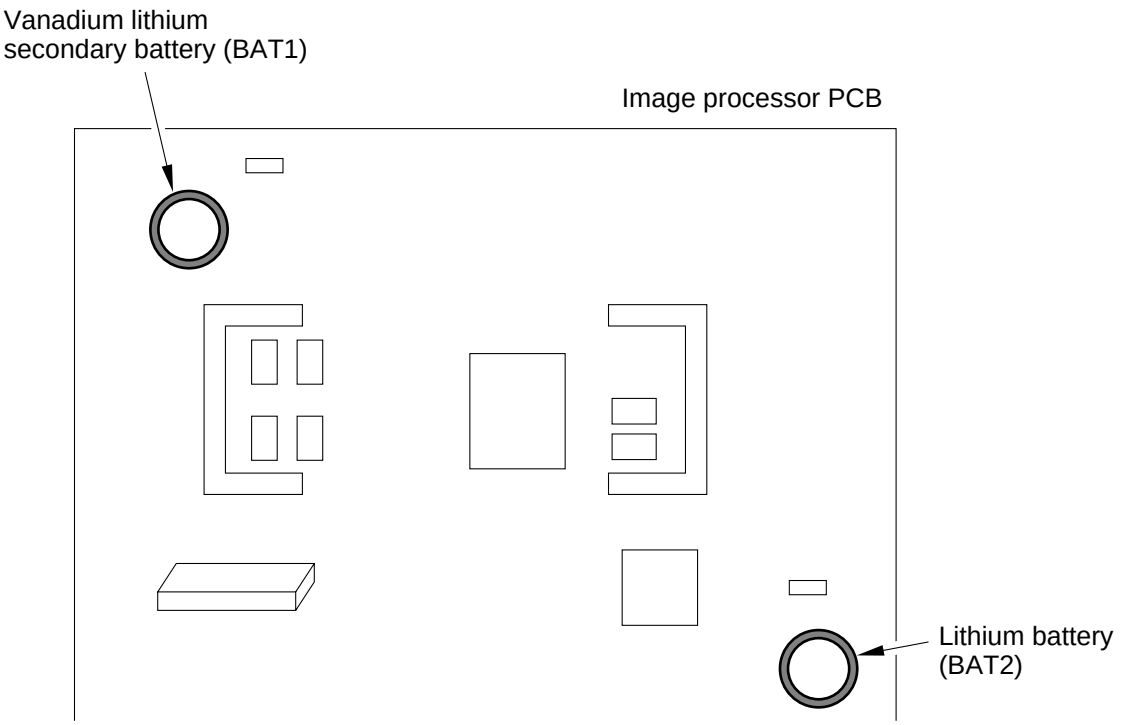


**Figure 9-401**


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## 2. Vanadium lithium secondary battery (BAT1)

- Types of data this battery backs up: Image data (data of fax transmission and receiving).
- IC which this battery backs up: DRAM on the image processor PCB (IC7, IC8, IC9, IC10).
- Amount of back-up time: approximately 3 hours (in an environment subject to normal temperatures and normal atmospheric pressure, where the power switch of the main unit has been ON continuously for one day or more).
- Effective life of the battery: approximately 5 years, or until the battery has been 100% discharged 40 times).

The BAT1 of the main unit cannot be replaced as a single unit. For this reason, when the battery dies, it is necessary to replace the image processor PCB.

The data this battery protects are the image data from transmitting and receiving faxes. It does not store the image data from the usage of the memory copy function.

**Caution:**

Should the length of time noted above as “amount of back-up time” be exceeded, the backed up data will be erased.
In addition, the image data will also be erased should the jumper plug (JP1), located on the image processor PCB, be removed. In order to avoid this, when servicing the unit, please print out the data stored in the memory prior to commencing servicing operations.

### ■ How to print:

- Printing transmission image data:
  Memory Reference > Print document > Select document to print > Print.
- Transfer Printing received image data:
  In case the machine malfunctions and cannot print, this machine is equipped with a function which allows the transfer of received image data to another fax machine for printing.
  Memory Reference > Transmit document > Select document to transfer > Designate transfer destination > Select sender’s name > Transfer.

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**Reference:**

1. A DRAM check will erase all the image data; therefore, prior to performing a DRAM check, please be sure to print the image data. To perform a check on the DRAM, press: SERVICE MODE>TEST MODE>1:DRAM.
2. If a memory clear report automatically prints out when the power switch of the main unit is turned on, the data on the list are the image data the unit was unable to save, and which were deleted.
   After this list is printed, the system automatically deletes the stored management information. An example of a memory clear report is displayed below in diagram 9-401.

01/18/1999 09:54 FAX ☑001

**********************************
*** MEMORY CLEAR REPORT ***
**********************************

MEMORY FILES DELETED

| TX/RX NO | MODE | DESTINATION TEL/ID | PGS. | SET TIME | ST. TIME | SENDER NAME |
|---|---|---|---|---|---|---|
| 0001 | TRANSMIT | 1234 | 1 | 01/18 09:47 | | |

**Figure 9-401**

### 3. Lithium battery (BAT2)

- Types of data this battery backs up: Control data (User data, activity management data, service mode settings content, etc.)
- IC which this battery backs up: image processor PCB (IC36, IC37).
- Effective life of the battery: approximately 5 years.

When the lithium battery (BAT2) dies the message “DATA ERROR” is displayed on the display panel when the power switch is turned on. When this occurs, please change the lithium battery. In this situation, the information stored in the control memory has been erased, and so printing out is not possible.

After the lithium battery has been changed, and the power switch on the main unit is turned on again, the message “Data have been destroyed” is displayed on the display panel again. Please press the set key on the control panel. The data stored in the control memory will be reset to the factory settings. The unit will go into stand-by mode.


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## 4. Jumper plugs

The image processor PCB has been equipped with a jumper plug. This acts to prevent the depletion of the back up batteries.

The function of the jumper plug (JP1) is to help prevent the consumption of the batteries. Service parts processor PCB's come with jumper plug (JP1), set to the OFF position, and without jumper plug (JP3). Consequently, when the image processor PCB needs to be replaced, please set the JP1 to the ON position. When the JP3 is being replaced, it is necessary to remove it from the board prior to replacement, and mount it on the new board.

When the above operation is performed, and the power supply of the main unit is switched back on, the message "PRESS SET KEY" appears on the display. Please press the set key found on the control panel, which will re-set the SRAM (IC36, IC37) to the factory settings. The unit will go into stand-by mode. The control data can be re-entered at this point.

**Caution:**

The function of the vanadium lithium secondary battery (BAT1) is to back up transmitted and received faxed image data. Accordingly, if the main unit has not been equipped with a fax function, it is not necessary to change the JP1 to the ON position.
Should a fax be added to the main unit as an accessory, the JP1 must be changed to

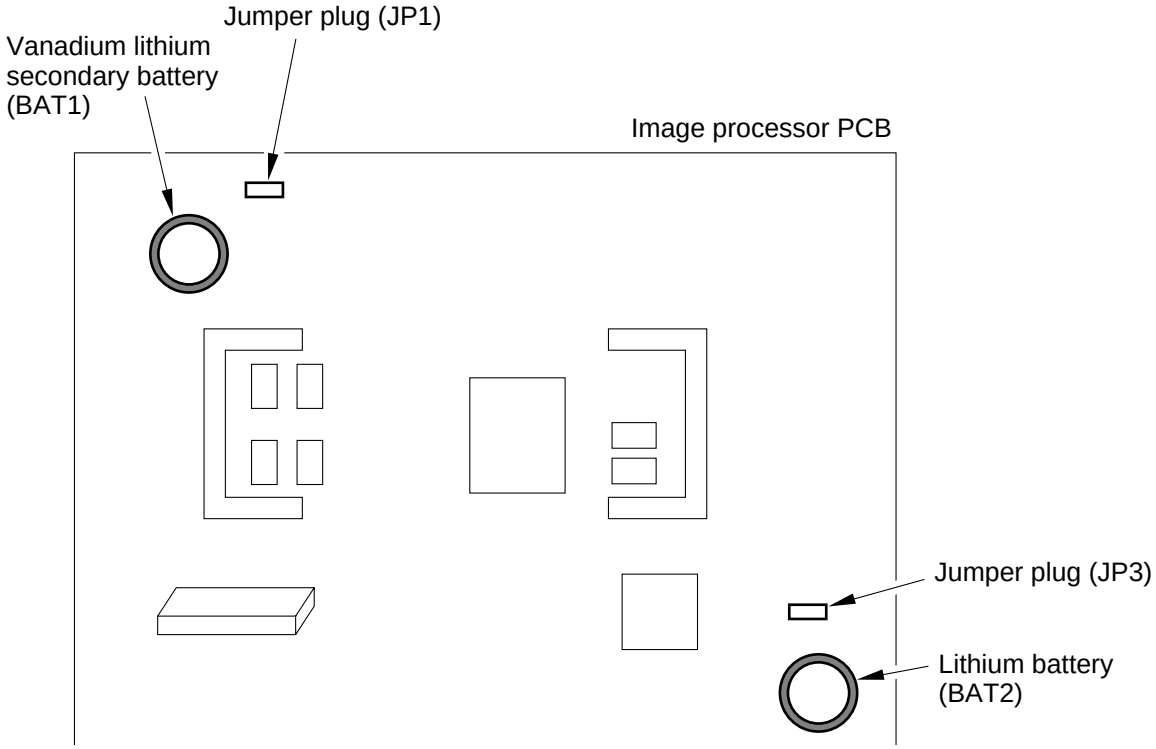


**Figure 9-403**



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# B. Back-up Data

## 1. Data types

The table below lists the types of data that each back-up lithium battery (BAT1, BAT2) stores. These batteries are located on the image controller PCB.

The lithium battery BAT2 backs up the a), b), and c) types of data stored in the control memory, while the vanadium lithium secondary battery BAT2 backs up the data d) stored in the image memory.

a) User data

| Item | Details | |
|---|---|---|
| Registration/Setting | 1. Data registration | (Reception/transmission mode settings) |
| | 2. Telephone number registration | (One-touch dial, etc) |

**Table 9-401**

b) Service mode data

| Item | | Details |
|---|---|---|
| #1. | SSSW | Error management, echo countermeasures etc. |
| #2. | MENU | NL equalizer, sending level, etc. |
| #3. | NUMERIC Param | T1 Timer setting, etc. |
| #4A. | SPECIAL | Normally not operated |
| #4B. | NCU | Normally not operated |
| #4C. | ISDN | Normally not operated |
| #5. | TYPE | Normally not operated |
| #6. | SCANNER | Normally not operated |
| #7. | PRINTER | Reduction / cassette selection settings, etc. |
| #8. | CLEAR | Scan count, print counter, etc. |
| #9. | ROM | Version number, checksum, etc. |
| #10. | CS SET | Revert to initial mirror mount settings. |

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c) Management data

These are automatically stored data regarding the main unit's operating conditions.

| Item | Details |
|---|---|
| Activity management record | Record of the past 40 transmissions |
| System dump record | Past communication conditions, error communication history, etc. |

**Table 9-403**

d) Data backed up by BAT1

| Item | Details |
|---|---|
| Transmission image | Transmission (memory transmission, report transmission) |
| | Delayed communications |
| | Delayed broadcast transmission |
| | Polling transmission |
| | Relay broadcast transmission |
| Reception image | Confidential reception |
| | Memory reception |

**Table 9-404**

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## 2. Printing the back-up information list

It is possible to print out an information list of the data backed up by the batteries in the control memory.

When changing the image processor PCB or the lithium battery, or while the power switch is off, when removing the jumper plug (JP3) located on the image processor PCB, please make sure to print out the following lists prior to removing the jumper plug.

a) User data list

| Item | List name |
|---|---|
| Registration mode | User data list |
| Dial registration mode | 1-touch dial telephone number list 1 |
| | Coded speed-dial telephone number list 1 |
| | Group dial telephone number list 1 |
| | 1-touch dial telephone number list 2 |
| | Coded speed-dial telephone number list 2 |

**Table 9-405**

b) Service Mode data list

| Item | List name |
|---|---|
| Service mode data | System data list |

**Table 9-406**

c) Management data

| Item | List name |
|---|---|
| Activity management records | Activity management report |
| System dump records | System dump list |

**Table 9-407**


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## ■ Back-up battery function table

| | BAT1 | BAT2 |
|---|---|---|
| Type | Vanadium lithium secondary battery | Lithium battery |
| Back-up IC | DRAM (IC7,IC8,IC9,IC10, and 8MB increased memory DRAM) | SRAM (IC36, IC37) |
| Battery life | Approximately 5 years, or until the battery has been 100% discharged 40 times | Approximately 5 years |
| Individual battery replacement | Not possible | Possible |
| Operation JP plug | JP1 (in operation when in the ON position) | JP3 |
| Back-up data | • Transmission image data (Memory transmission, broadcast transmission, delayed transmission, delayed report, polling transmission, relay broadcast transmission)<br>• Reception image data (Confidential reception, memory reception) | • User data (User mode registration)<br>• Telephone number registration<br>• Service mode registration<br>• Management data (communications management registration, system dump registration) |
| Back-up data information print | • Transmitted image print using the Memory Reference function, and received image transfer print. | • User data list<br>• One-touch dial telephone number lists 1 and 2<br>• Speed-dial telephone number lists 1 and 2<br>• Group dial telephone number list 1<br>• System data list<br>• Activity management report<br>• System dump list |

**Table 9-408**



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# V. DISASSEMBLY, ASSEMBLY

This section describes mechanical features and operations as well as disassembly and assembly procedures.

The following precautions must be observed during disassembly and assembly work.

1. ⚠ For the sake of safety, disconnect the power plug before performing any disassembly or assembly work.
2. Unless otherwise specified, assembly work is performed in the reverse order of the disassembly operations.
3. Be sure to use the right type (diameter and length) or screws in the right places.
4. An inner-clip washer is used with one securing screw in the metal cover to prevent buildup of static electricity. Make sure to use this washer during assembly work.
5. In principal, the copier must not be operated when parts have been removed.
6. ⚠ Do not throw the drum cartridge into fire - there is a danger of explosion.
7. In order to discharge any static electricity, touch the main unit's metal assembly before embarking on any work relating to the PCB. This will protect the PCB from any electrostatic damage.
8. When disassembling, do not remove screws which have been paint-locked.


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## A. Control panel

1) Remove the 2 installation screws from the left and the right sides, and remove the front upper cover [1].

2) Remove the 2 installation screws from the left and the right sides, and remove the control panel lower cover [2].

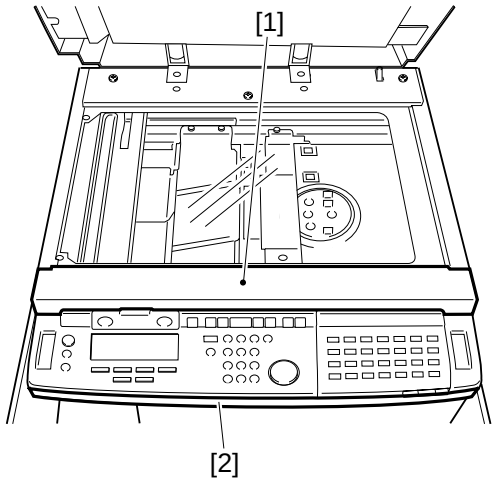


**Figure 9-501**

3) Remove the 6 installation screws [3] from the left and right sides (two are attached to the grounding cable).

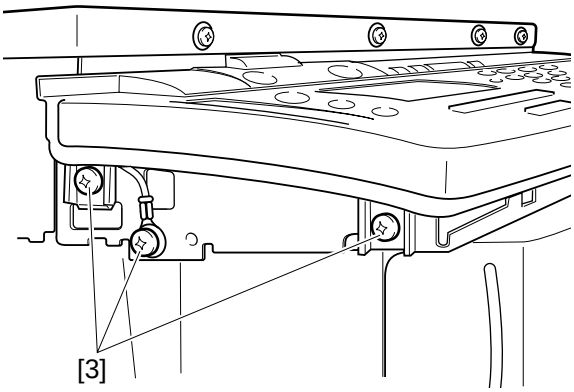


**Figure 9-502**

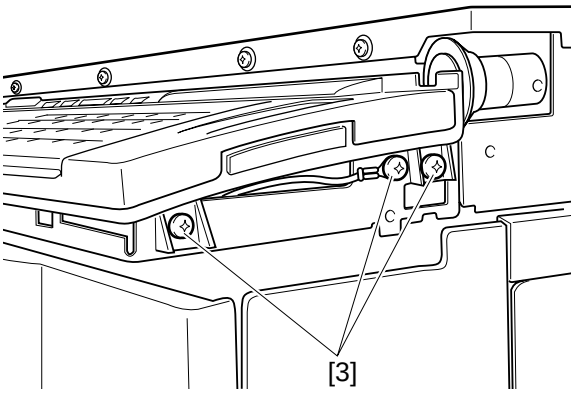


**Figure 9-503**



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4) Move the control panel forward, remove the 2 connectors [4], and remove the control panel.

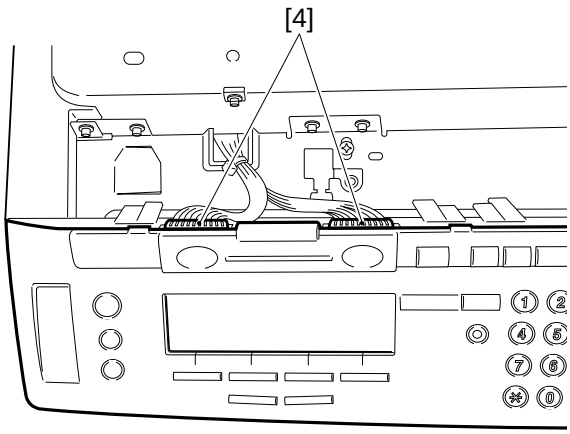


**Figure 9-504**


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## B. Main Motor

### 1. Removing the printer unit

1) Pull out the cassette on the main unit, and open the front cover.

2) Remove the cartridge.

3) Remove the 2 installation screws and remove the lower left cartridge.

4) Remove the 5 installation screws [1], and remove the delivery cover. Place your hands as indicated in the diagram, and lift it up a little to remove it.

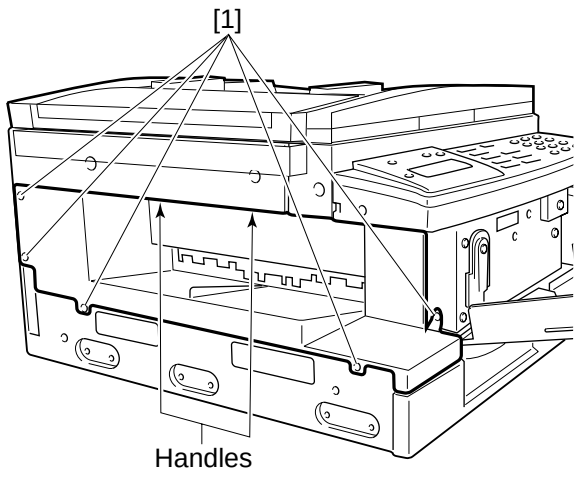


**Figure 9-505**

**Caution:**

On the upper portion of the delivery cover, inside the part marked ▲, there is a tab for connecting. When the cover is raised, the tab is released from the catch.
When putting the cover on, while ensuring that you have placed the tab correctly in the 'U' guide, re-fit the cover to the unit.

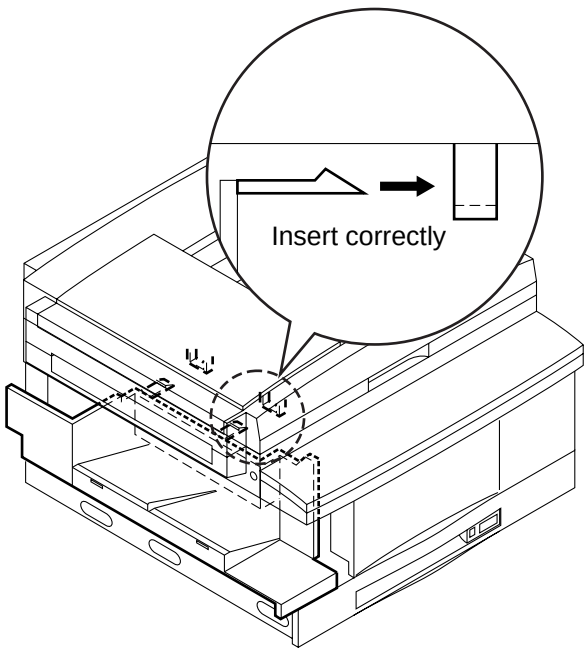


**Figure 9-506**



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5) Remove the 2 installation screws [2] on the fixing assembly, and remove the grounding cable [3].

6) Remove the 5 connectors [4], which are attached to the DC controller PCB.

7) Remove the stop ring, and remove the cord guide [5].

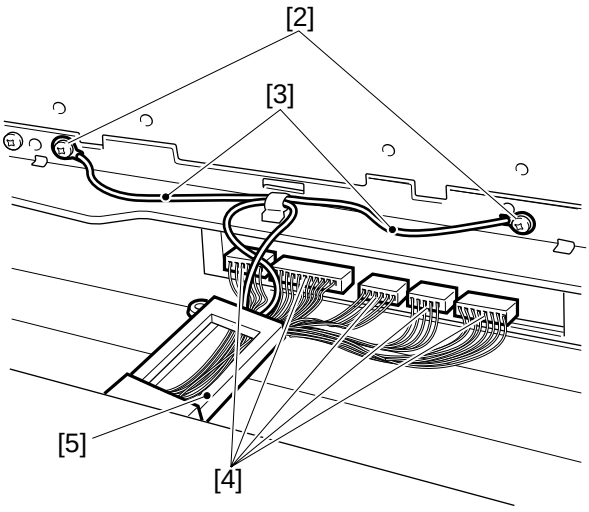


**Figure 9-507**

8) Remove the installation screw [6], and remove the cartridge drive release plate [7].

9) While gripping the release lever [8], slowly pull out the printer unit.

10) Place your hand in the cassette insertion inlet, and while pushing on the upper portion of the release catch, slowly pull out the printer unit. Once the unit has come out far enough, place your hands on the front part and the rear side, and continue to remove the printer unit while supporting it.

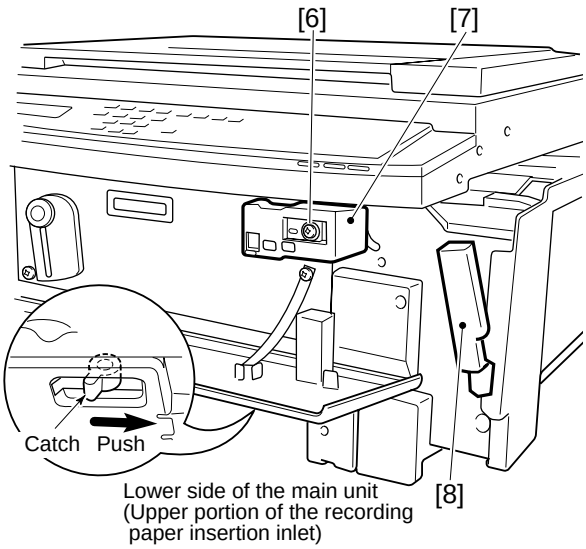


**Figure 9-508**

**Caution:**

If the printer unit is pulled out too quickly, there is a chance that it may fall out, so please be sure to pull it out slowly.


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## 2. Cautionary points relating to the removal and insertion the printer unit

■ When lifting the printer unit, please place your hands in the positions indicated in the diagram.

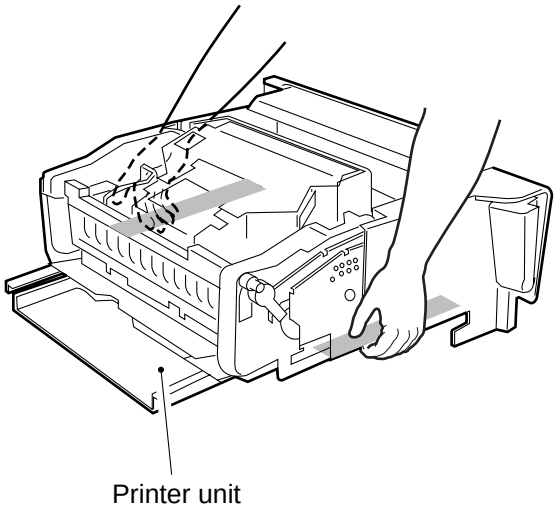


**Figure 9-509**

■ When removing and inserting the printer unit, please be sure not to bend the main unit's sheet metal plate which is indicated in the diagram. This is the primary cause of problems during removal and insertion of the cassette.

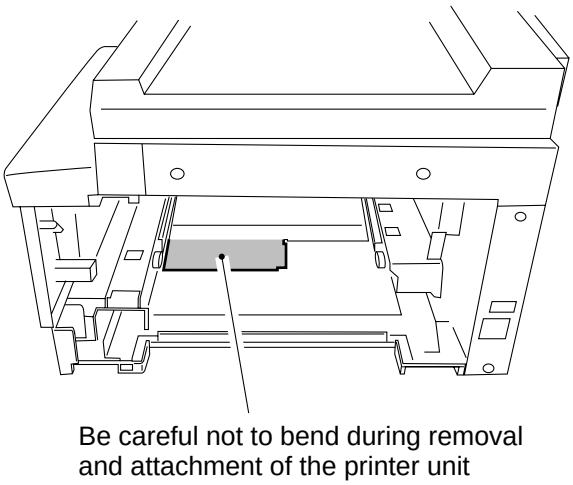


**Figure 9-510**

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■ When setting the printer unit into the main body, ensure that the ↑ ↓ marks on the seals located on the front and rear portions of the main unit rail line up with the positions of the yellow rollers located on the front and rear portions of the left edge of the printer unit.

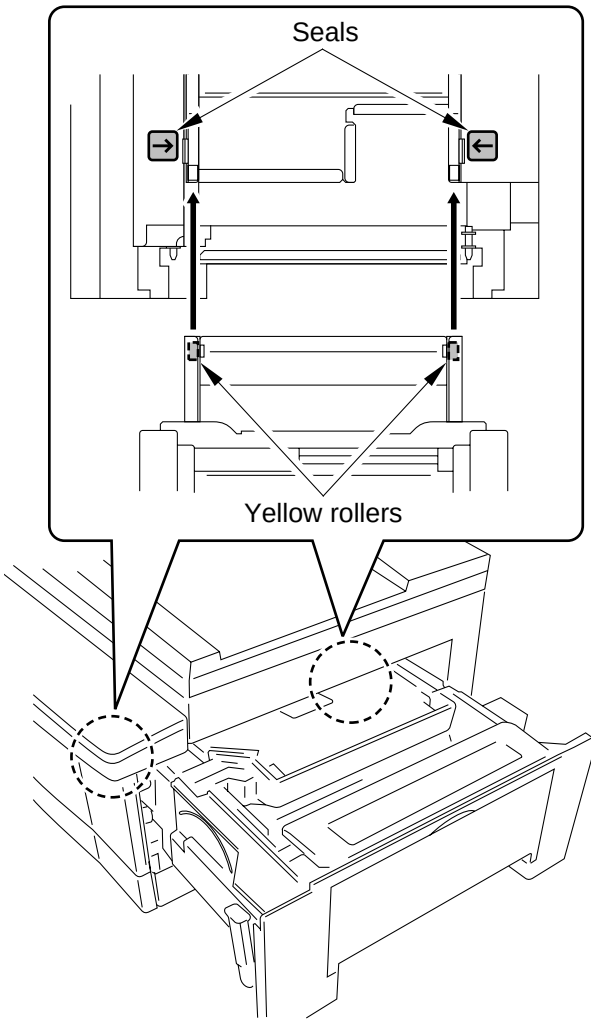


**Figure 9-511**


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### 3. Removing the main motor

1) Remove the printer unit from the main unit (see page 9-19 for further information).

2) While pressing the tab, remove the release lever [1].

3) Remove the 3 installation screws [2], and remove the drive assembly cover [3].

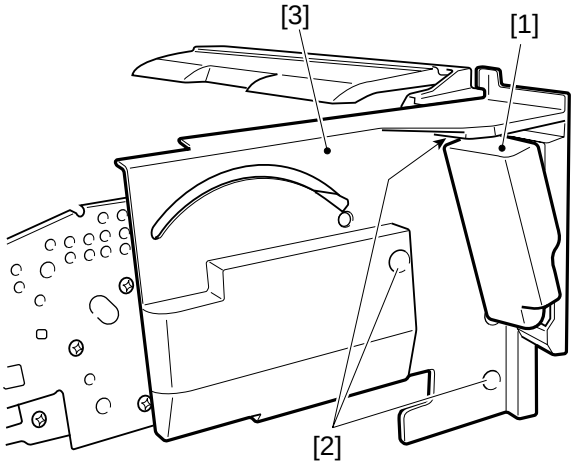


**Figure 9-512**

4) Remove the connector [4] from the main motor driver PCB.

5) Remove the 5 installation screws [5] and remove the main drive assembly [6].

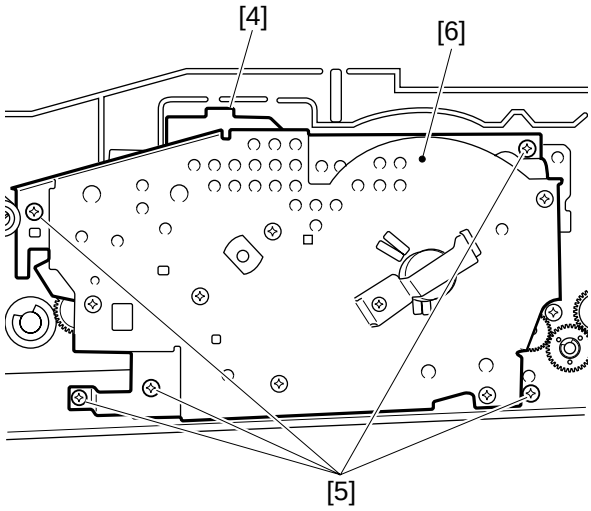


**Figure 9-513**

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6) Remove the 3 installation screws [7], and remove the main motor [8] from the driver PCB.

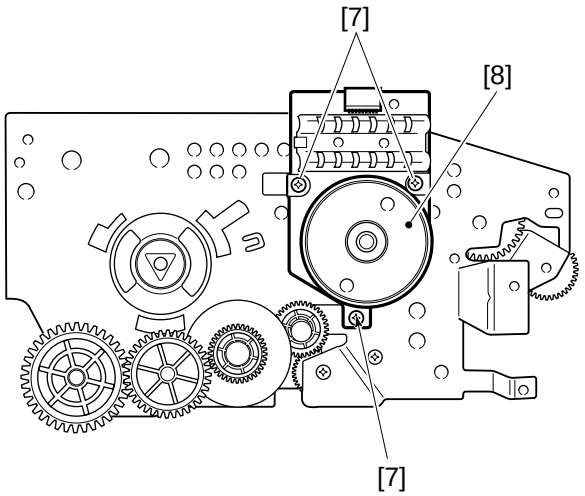


**Figure 9-514**

**Reference:**

The structure of the main drive unit is depicted below.

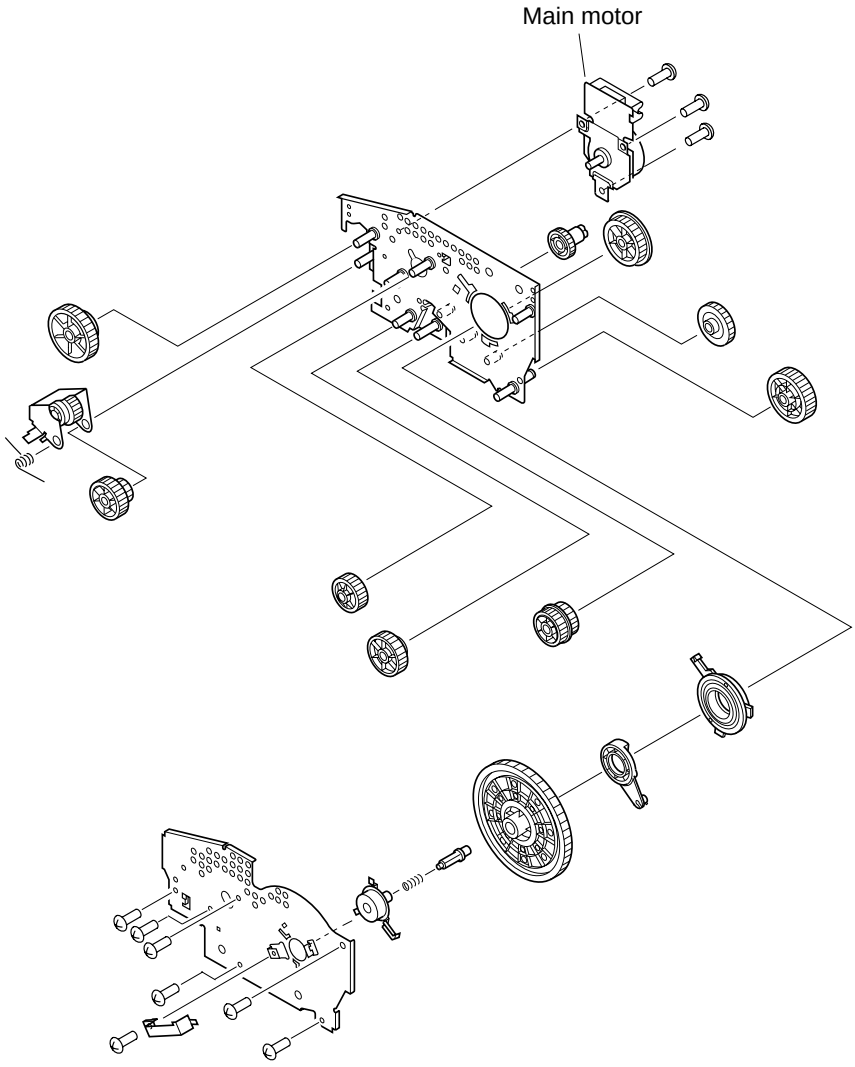


**Figure 9-515**


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## C. DC controller PCB

1) Remove the printer unit from the main body (see page 9-19 for further information).

2) Stand the printer unit in the same way as depicted in Figure 9-516.

**Caution:**

- When standing the printer unit on a desk or other furniture, please be careful not to scratch the surface of the furniture.
- Also, before performing this step, please spread out newspapers, etc. to ensure the right side of the printer unit's external cover is not scratched.
- Do not perform this operation on an unstable surface. Stand the printer unit on a horizontal surface, and make sure that it cannot topple over. Make sure to remove the cartridge prior to standing the printer unit up.

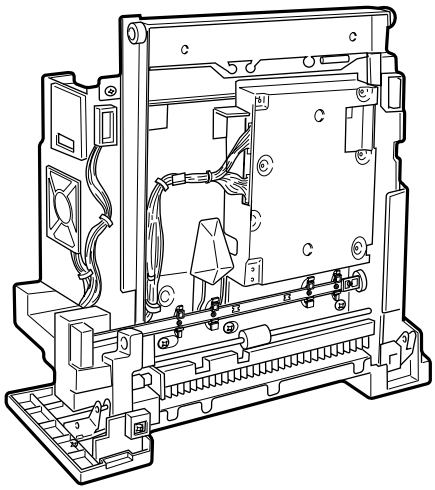

**Figure 9-516**

3) Remove all connectors which are attached to the DC controller PCB.

4) Remove the 4 installation screws [1].

5) Slide the DC controller PCB together with the support plate upwards. Then, pull it out towards the front.

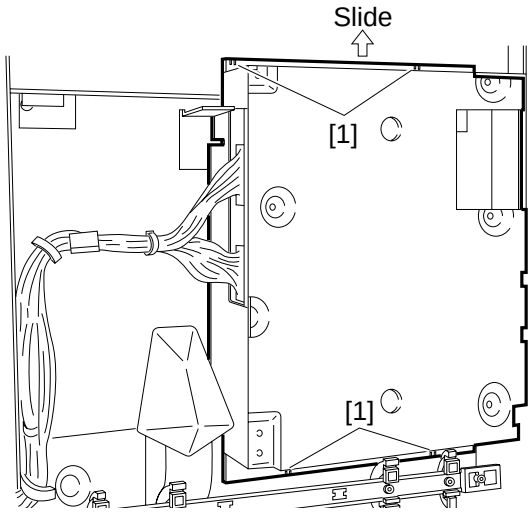


**Figure 9-517**



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# D. Image processor PCB

## 1. Removing the ROM DIMM

1) Remove the installation 4 screws, and remove the main unit's back cover.

2) Spread the upper and lower tabs [2] of the ROM DIMM [1], and remove the ROM DIMM.

**Caution:**

When removing the ROM DIMM, if it is pressed down too strongly, it may cause damage to the mount, so perform this operation carefully.

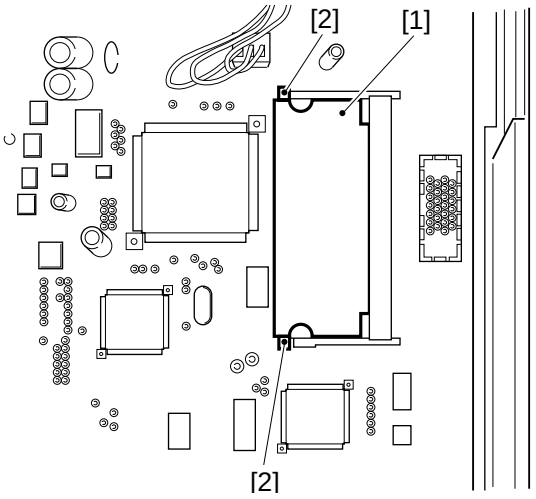


**Figure 9-518**

## 2. Removing the image processor PCB

1) Remove the 4 installation screws and remove the main unit's back cover.

2) Remove the 7 connectors which are attached to the image processor PCB and remove the 2 flat cables.

3) Remove the 4 installation screws [1], and remove the image processor PCB [2].

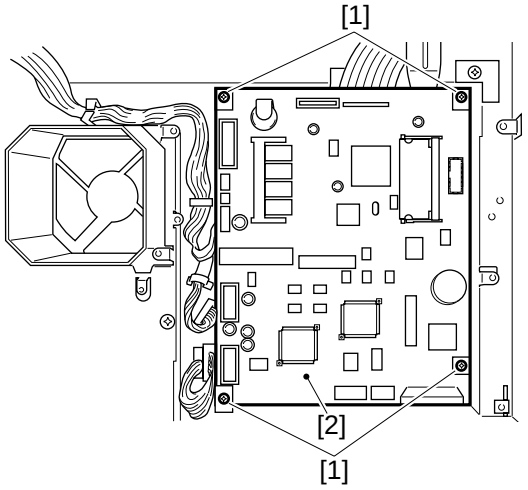


**Figure 9-519**


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## E. DC power supply PCB

1) Remove the 4 installation screws, and remove the main unit's back cover.

4) Remove the 5 installation connectors which are attached to the DC power supply PCB.

5) Remove the 4 screws [1], and remove the DC power supply PCB.

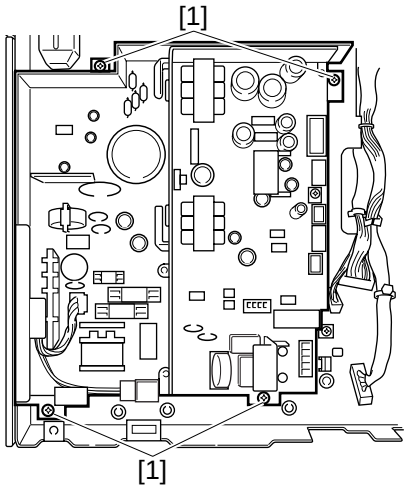


**Figure 9-520**



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# CHAPTER 10

# CASSETTE FEEDER

In this chapter, the cassette feeder's basic operation, purpose and function, as well as the relationship between the electrical system and the mechanical system is summarized. An overview of each part's operation timing is also included.

In this manual, the accessory one level cassette feeder unit D1 and the accessory three level cassette feeder unit E1 are called the cassette feeders.

The units depicted in the diagrams in this chapter have all been fitted with the automatic document feeder. For more information regarding the automatic document feeder, please refer to the ADF service manual included in this manual.


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# I. OVERVIEW

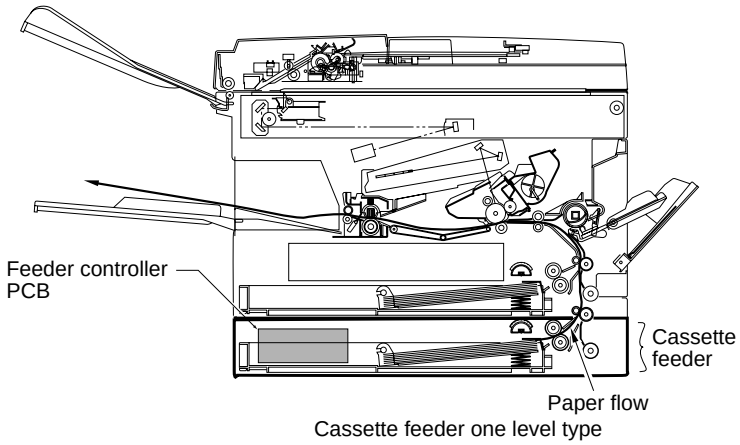
The cassette feeder structure is displayed in the diagrams below.

The unit may be equipped with a one level cassette feeder or with a three level cassette feeder unit.

The structure of each cassette feeder is the same, and each cassette feeder is equipped with a pick-up assembly and a feeder controller PCB, which controls the operation of the pick-up assembly.

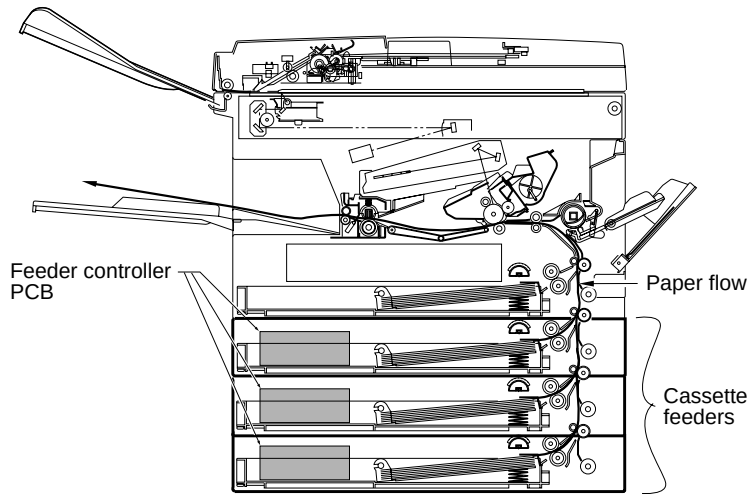
**Reference:**

If the cassette feeder has two levels, or four levels or more, a control malfunction will occur in the main unit.




Cassette feeder one level type

**Figure 10-101**




Cassette feeder three level type

**Figure 10-102**

The units depicted above are fitted with an ADF. Those units not equipped with an ADF are the same.

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**Reference:**

With the three level cassette feeder, in the lowest cassette feeder there is no interface connector provided between this and a lower feeder. Therefore, the lowerst cassette feeder cannot be used as the first or second cassette feeder.

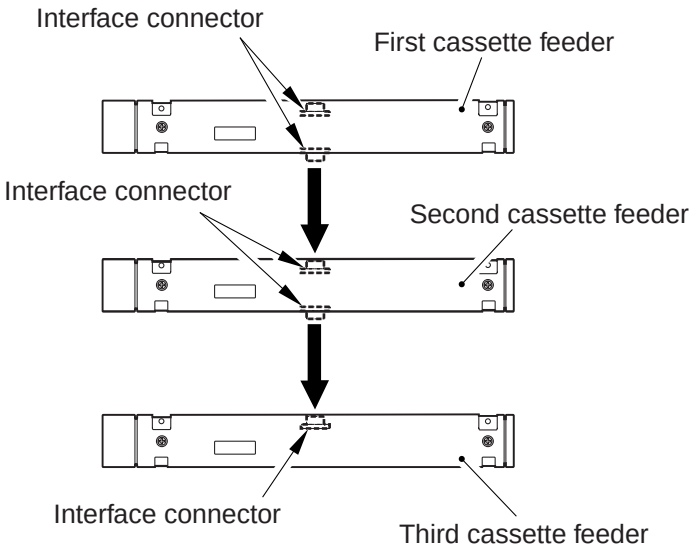


**Figure 10-103**


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# II. OVERVIEW OF THE ELECTRICAL CIRCUITS

## A. Overview

Operation of the load used by the cassette feeder is controlled by commands sent from the CPU (IC301) on the main unit's DC controller PCB, based on the programme stored in the CPU (IC601) on the feeder controller PCB.

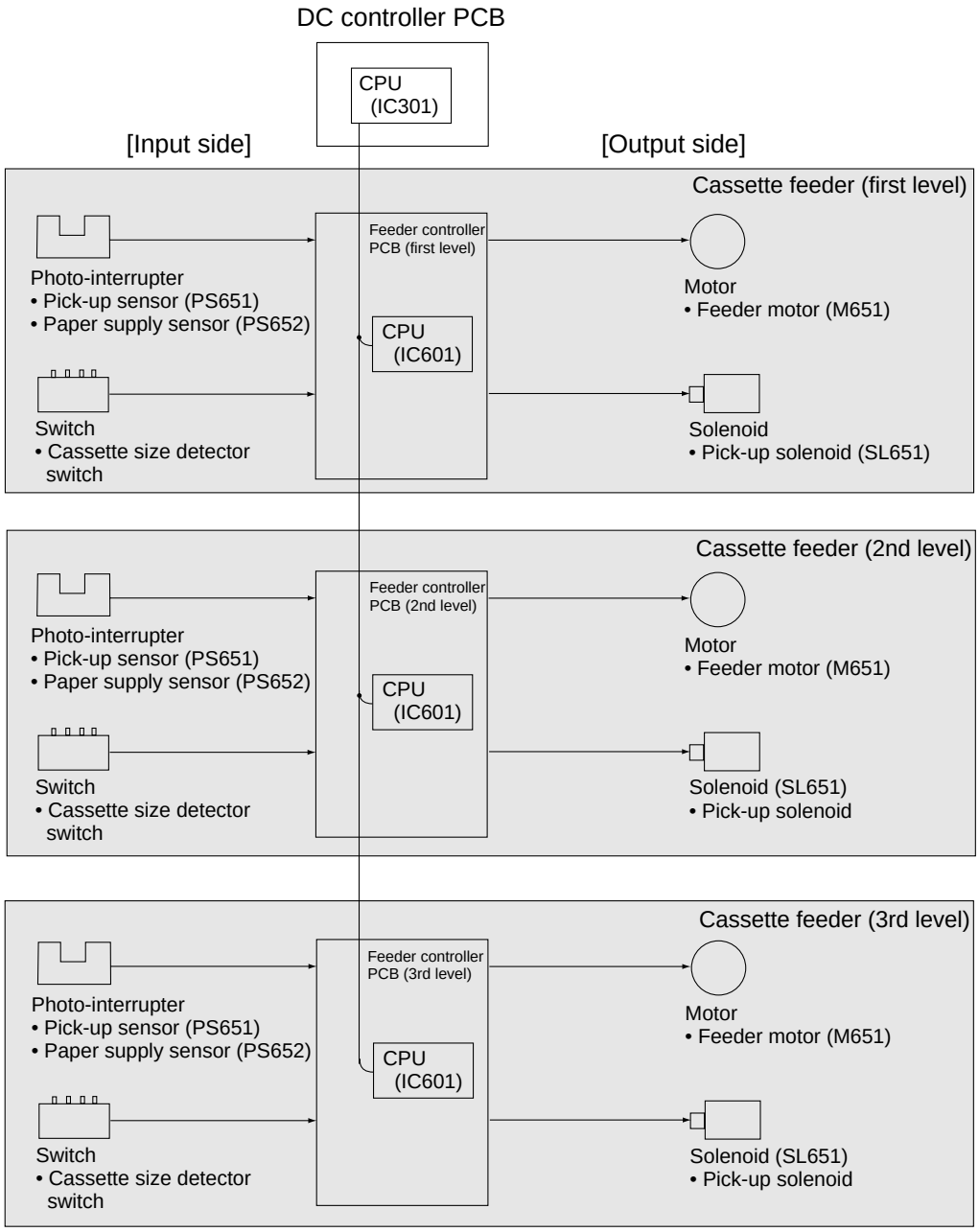


**Figure 10-201**

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# III. FEEDER CONTROLLER PCB INPUT AND OUTPUT

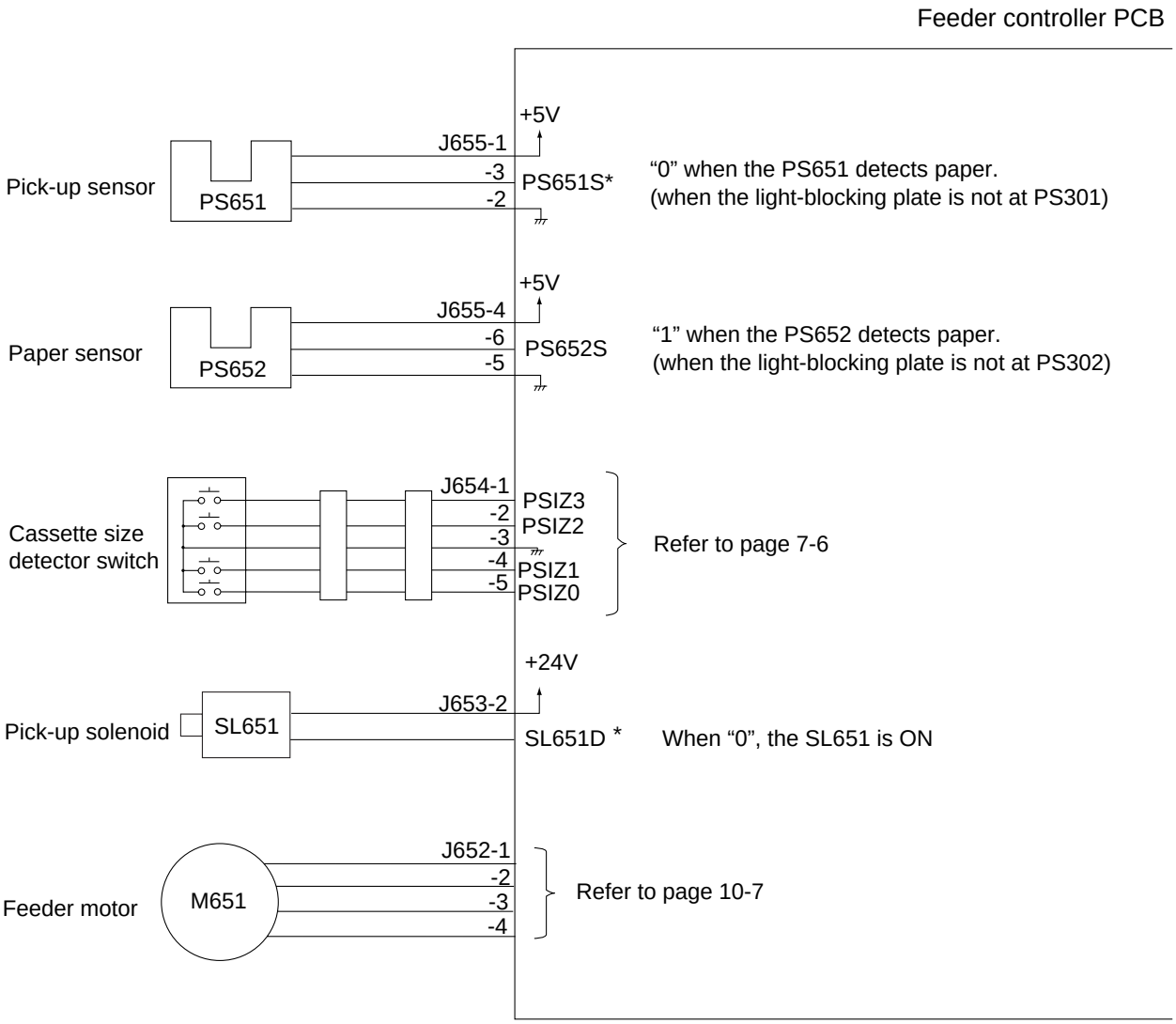


**Figure 10-301**


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# IV. OPERATION OVERVIEW

## A. Overview

Figure 10-401 is the concept figure of the structure of the cassette feeder.

The cassette feeder's operation is controlled by the feeder controller PCB. The main unit's DC controller PCB sends the pick-up control signal to the feeder controller PCB.

When the feeder controller PCB receives the pick-up control signal, the feeder motor (M651) begins to rotate, and the pick-up solenoid is turned ON. Once the paper has passed through the separation roller in order for any double feeds to be extracted, the paper is fed through the feed roller and the vertical path roller on its way to the main unit.

Further, the mechanical pick-up mechanism and the paper size selector mechanism of the cassette feeder perform in the same way as those of the main unit.

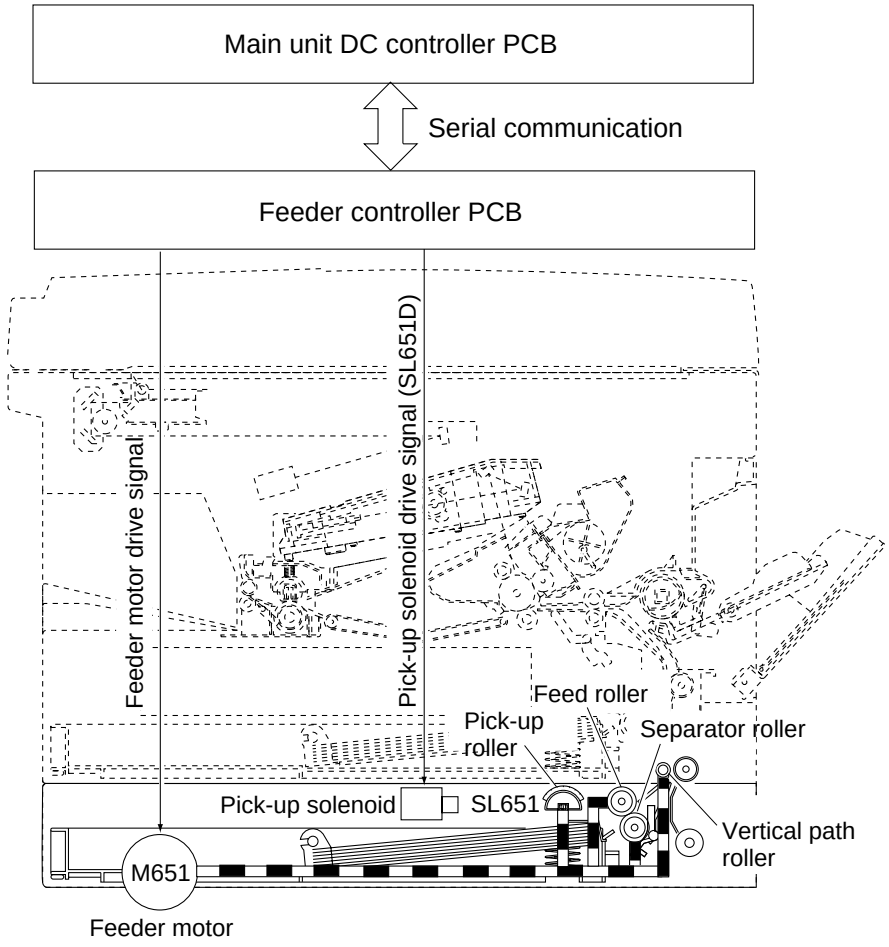


**Figure 10-401**

The unit depicted above is fitted with an ADF. The construction of the main unit is also the same for units not equipped with an ADF.



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## B. Basic Sequence

Condition: When 2 pieces of A4 paper are picked up from the first level cassette feeder

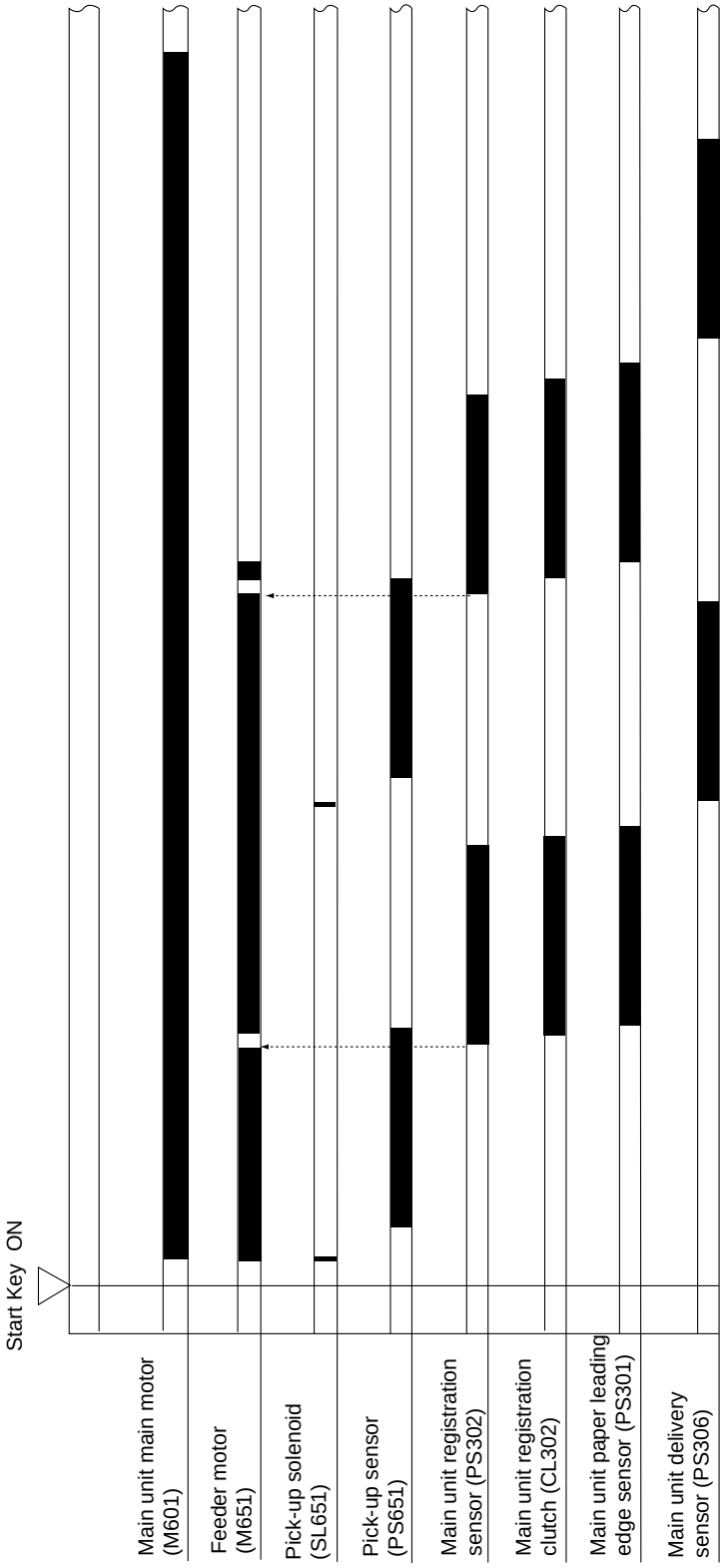
Start Key ON
Main unit main motor (M601)
Feeder motor (M651)
Pick-up solenoid (SL651)
Pick-up sensor (PS651)
Main unit registration sensor (PS302)
Main unit registration clutch (CL302)
Main unit paper leading edge sensor (PS301)
Main unit delivery sensor (PS306)

**Figure 10-402**


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# V. FEEDER MOTOR CONTROL

## A. Operation

The feeder motor (M651) of this unit uses a stepping motor.

The A phase pulse circuit and the B phase pulse circuit, located on the feeder controller PCB, emit drive pulses (A • A* • B • B*). Changes in the order and frequency of the pulses control the rotation.

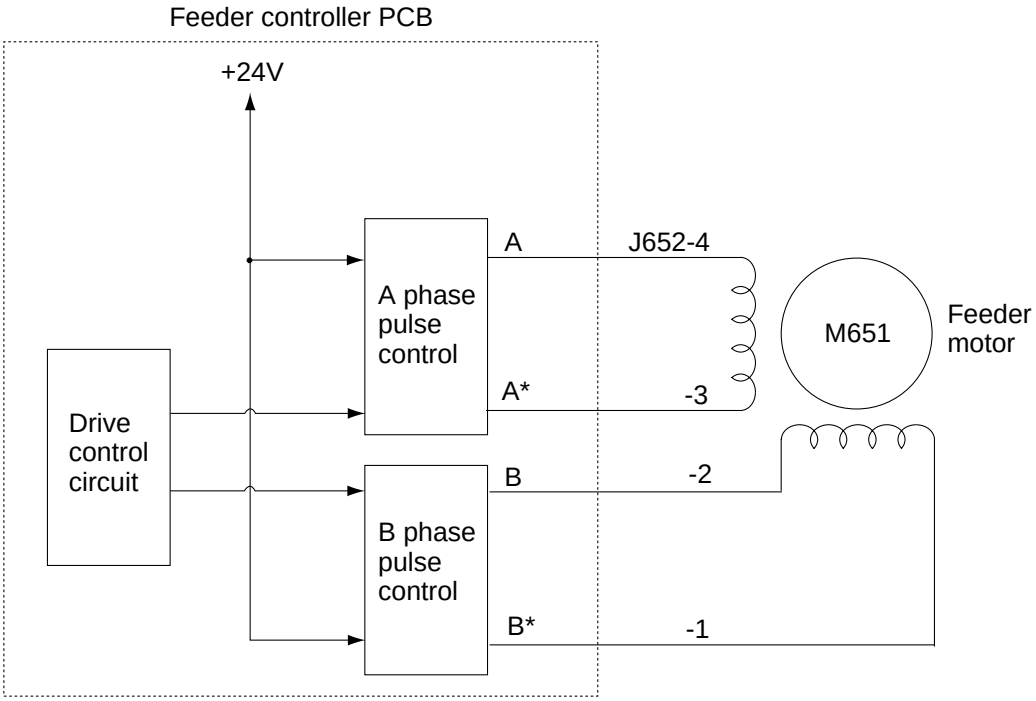


**Figure 10-501**



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# VI. JAM DETECTION

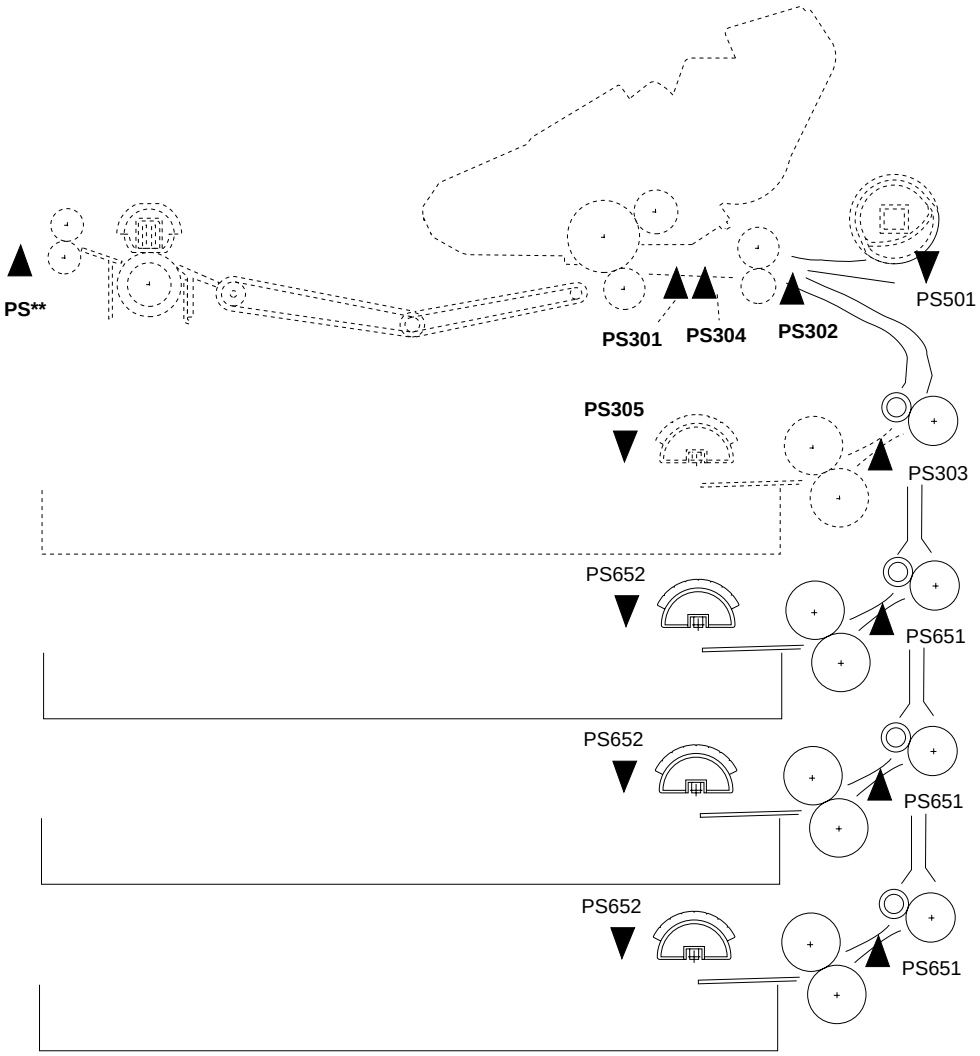
## A. Overview

The cassette feeder is equipped with a pick-up sensor (PS651), which monitors the pick-up and feeding function. It is also equipped with a paper supply sensor, which detects the presence or absence of paper.

According to a pre-programmed timing, the feeder controller PCB's CPU (IC601) performs checks to determine whether there is paper or not in the sensor area, as well as checks for jams. When the sensor judges there is a jam, the main unit's motor and the feeder motor are immediately turned OFF, and a jam message is displayed on the control panel.

**Reference:**

For more information regarding jam sensor timing after the main unit's registration sensor, please refer to the main unit's service manual.




PS651: Pick-up sensor PS652: Paper sensor PS302: Registration sensor

**Figure 10-601**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# B. Jam Sensing

## 1. Pick-up delay Jam

During the cassette feeding sequence, once the pick-up solenoid (SL301) is ON, if the paper does not arrive at the pick-up sensor (PS303) within 3 seconds, the feeding operation is retried. Once again, if the pick-up sensor does not come ON in the 3 seconds following the activation of the pick-up solenoid, the unit determines that a delay jam has occurred.

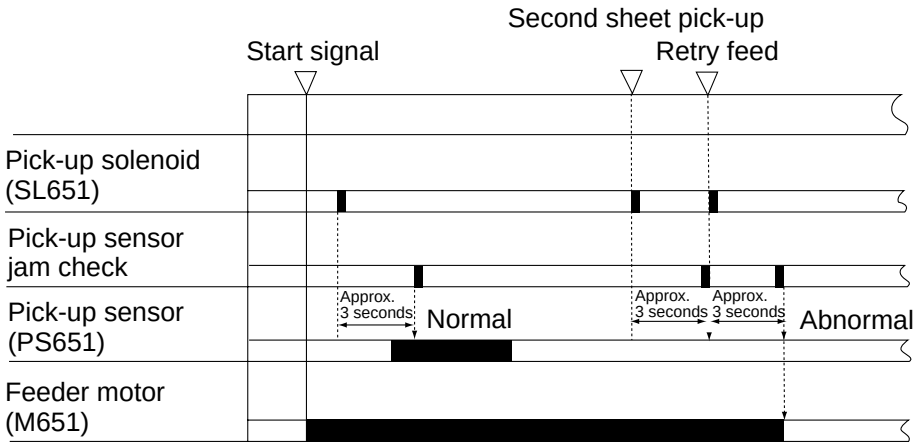


**Figure 10-602**



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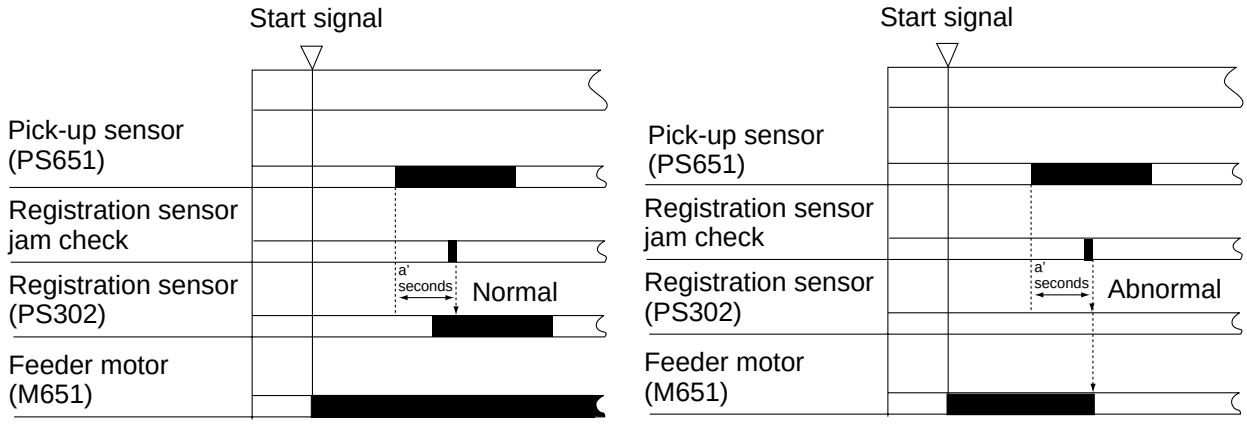
## 2. Registration sensor delay jam

Following the activation of the pick-up sensors in each of the cassette feeder levels, if the paper does not arrive at the registration sensor (PS302) within the designated amount of time, a registration sensor delay jam has occurred.

These are the detection timings for each cassette feeder:

| Pick-up level | Timer count time |
|---|---|
| Cassette feeder first level | Approx. 2.4 seconds |
| Cassette feeder second-level | Approx. 2.8 seconds |
| Cassette feeder third-level | Approx. 3.1 seconds |

**Table 10-601**




Note: In the figure, 'a' seconds stands for the timing count times displayed in table 10-601.

**Figure 10-603**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# VII. DISASSEMBLY, ASSEMBLY

This chapter describes mechanical features and operations as well as disassembly and assembly procedures.

The following precautions must be observed during disassembly and assembly work.

1. ⚠ For the sake of safety, disconnect the power plug before performing any disassembly or assembly work.
2. Unless otherwise specified, assembly work is performed in the reverse order of the disassembly operations.
3. Be sure to use the right type (diameter and length) or screws in the right places.
4. An inner-clip washer is used with one securing screw in the metal cover to prevent buildup of static electricity. Make sure to use this washer during assembly work.
5. In principal, the copier must not be operated when parts have been removed.
6. ⚠ Do not throw the drum cartridge into fire - there is a danger of explosion.
7. In order to discharge any static electricity, touch the main unit's metal assembly before embarking on any work relating to the PCB. This will protect the PCB from any electrostatic damage.
8. When disassembling, do not remove screws which have been paint-locked.

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## A. Removing the feeder motor

1) Remove the two screws, and take off the cassette feeder's rear cover.

2) Remove the relay connector [1], and remove the cord guide [2] from the cable in the two places indicated on the figure.

3) Remove the two screws [3], and remove the feeder motor [4].

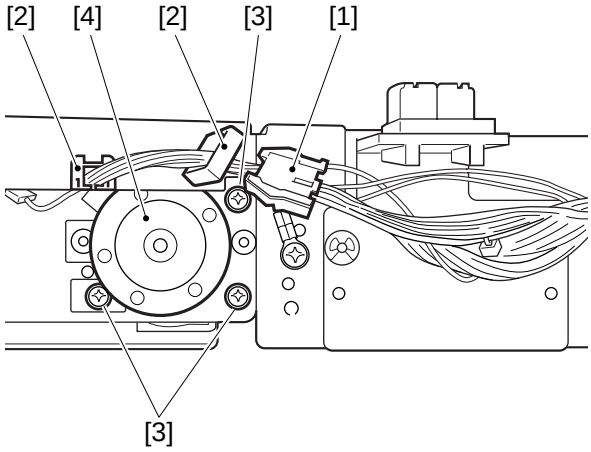


**Figure 10-701**

## B. Removing the pick-up/ feeder/separation motor

It is easier and more reliable to remove the cassette feeder from the main unit prior to attempting to remove the pick-up/ feeder/separation motor.

1) Grip the pick-up tab [1], and remove it from the pick-up drive shaft [2].

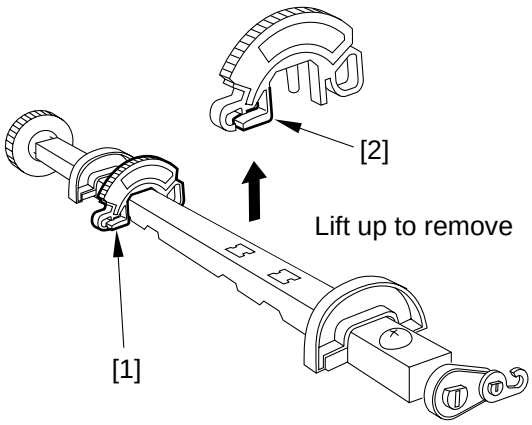


**Figure 10-702**


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2) Open the hinge door a little, and remove the right cover assembly [3]. Be careful not to open the hinge too far.

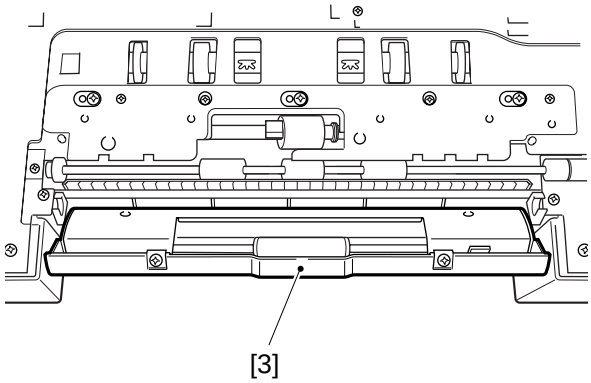


**Figure 10-703**

3) While gripping the claw, remove the feeder roller and the separation roller.

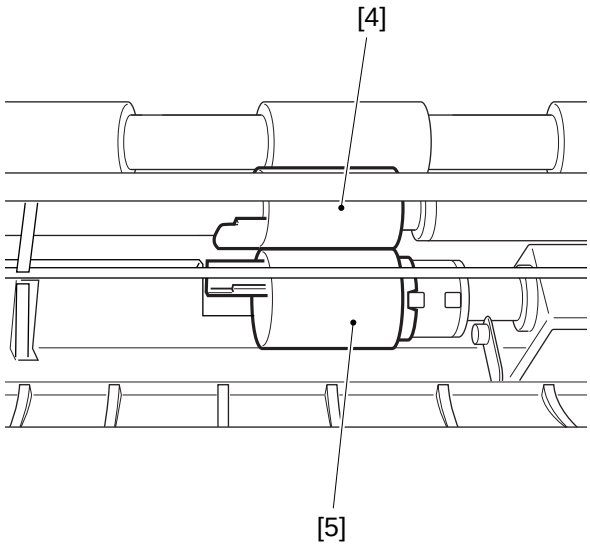


**Figure 10-704**

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## C. Removing the pick-up unit

1) Remove the cassette feeder from the main unit.

2) Remove the cassette.

3) Remove the rear cover of the cassette feeder.

4) Remove the connectors J652 and J653 from the top of the feeder controller PCB [1], and remove the disconnected connector cables from the cable guides, at three locations.

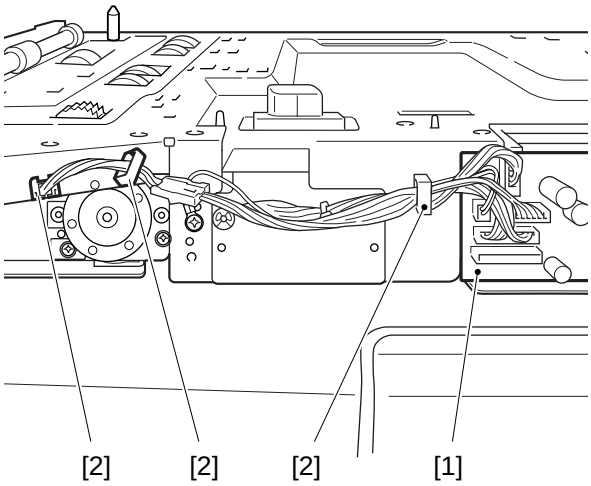


**Figure 10-705**

5) Remove the two screws [3], and remove the cord cover [4].

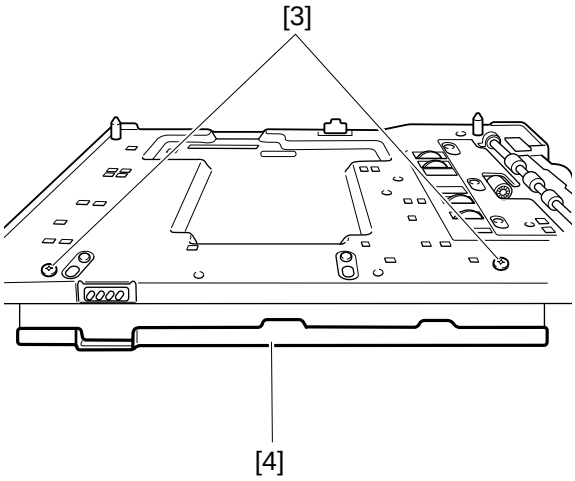


**Figure 10-706**


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6) Remove the relay connector [5] and the cord guide [6] from the front rear side of the cassette feeder.

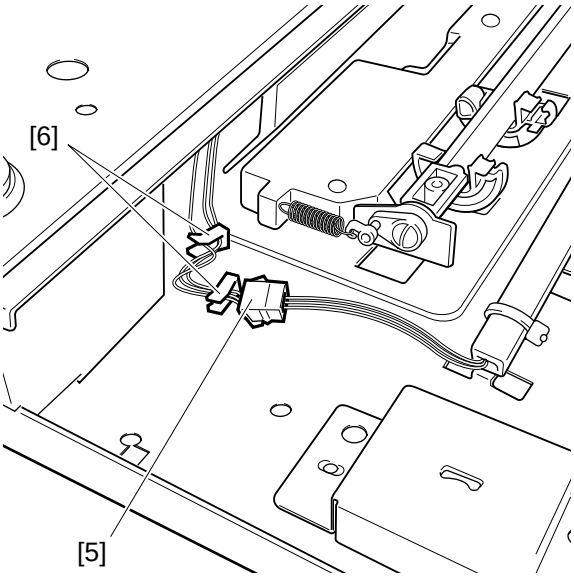


**Figure 10-707**

7) Remove the 4 screws located in the upper-right near side and far side [7], and remove the right foot cover assembly [8].

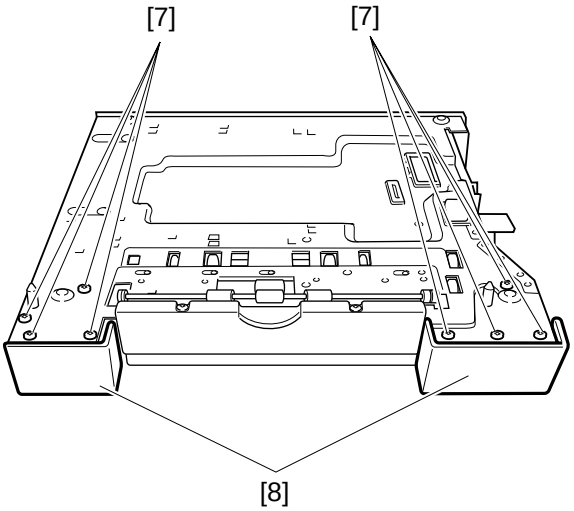


**Figure 10-708**

8) Remove the 6 screws [9], and remove the pick-up unit.

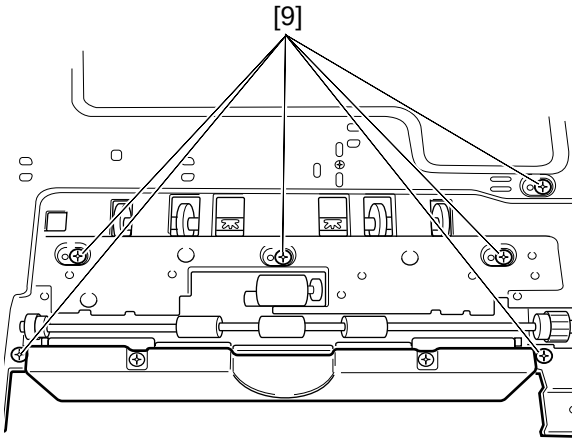


**Figure 10-709**



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# CHAPTER 11

# INSTALLATION

This chapter explains the installation method for this unit.

The unit's depicted in the diagrams in this chapter have all been fitted with an automatic document feeder. For machines which are not fitted with an ADF, the installation steps for the main unit are the same.


I. CHOOSING AN SUITABLE INSTALLATION LOCATION.....11-1
II. UNPACKING AND INSTALLATION.....11-3
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B. Installing the cartridge.....11-5
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F. Checking the Copy image.....11-13
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# I. CHOOSING AN SUITABLE INSTALLATION LOCATION

The conditions relating to the installation location are listed below. It is therefore advisable to read these conditions prior to the machine being brought into the customer's premises.

A. The unit must be connected independently to an electrical outlet which provides the rated power supply.
B. The ambient temperature must be between 5°C and 35°C, and the humidity must be between 10 to 90%RH. Please do not place the unit near water faucets, hot-water heaters, humidifiers or refrigerators.
C. Do not place the unit near a fire source, very dusty location, in a location where ammonia gas may occur, or in direct sunlight. In situations where placing the unit in direct sunlight is unavoidable, it is recommended that curtains be hung to protect the unit.
D. The room should have good ventilation.
E. The legs of the copier should not rise up off the floor. The copier should be kept level.
F. The machine should be set up at least 10 cm away from the wall, and there should be enough space to perform maintenance on the machine.
(Please refer to the following page "operation space overview")

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## Operation space overview

The figure below outlines the space necessary for performing maintenance.

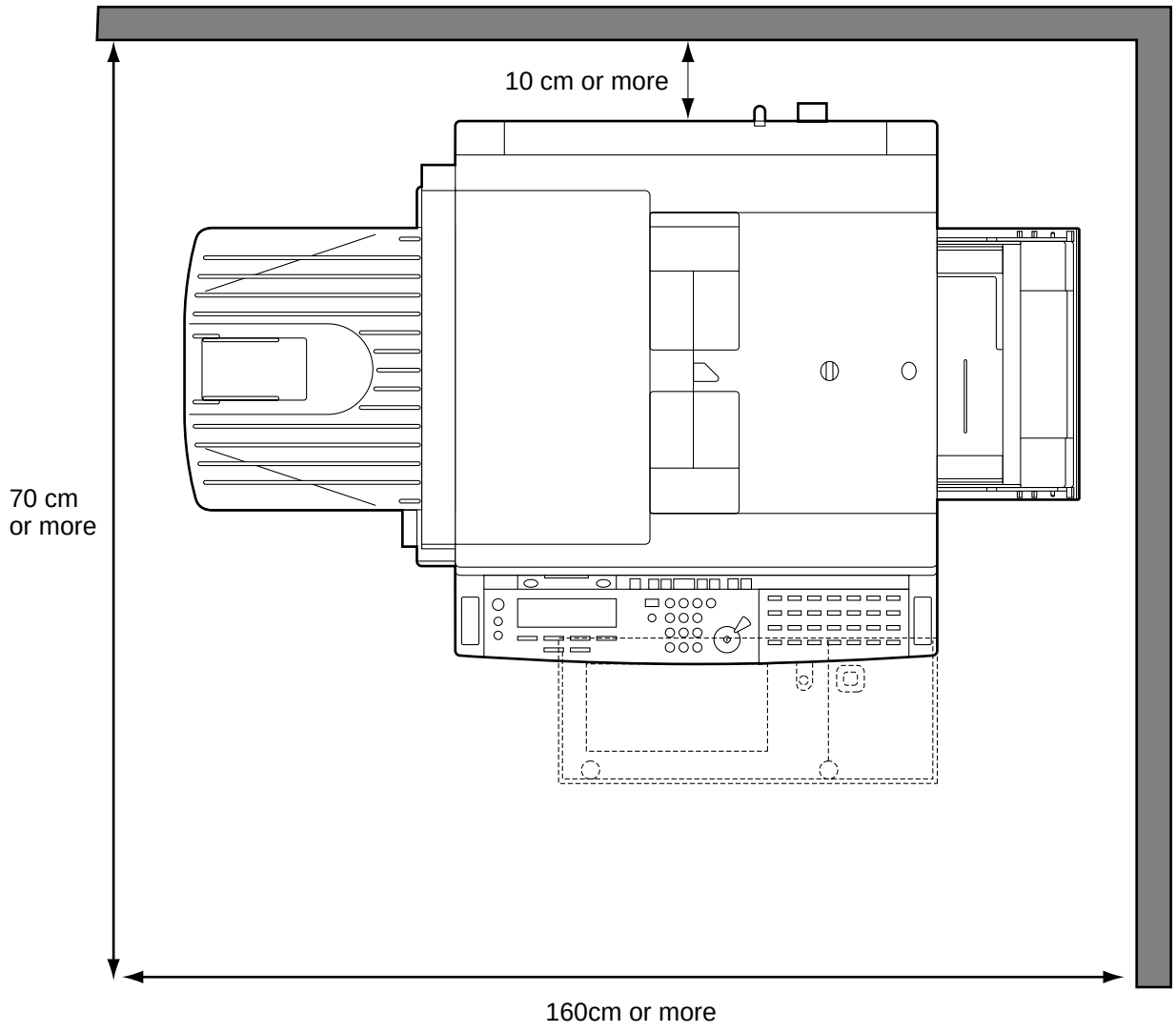


**Figure 11-101**

The above figure shows a unit which has been fitted with an ADF. The required width and depth for performing maintenance on machines which are not fitted with an ADF is the same as for those depicted.


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# II. UNPACKING AND INSTALLATION

When bringing something metal from a cold environment into a warm environment, drops of water may adhere to the metal surfaces. This phenomenon is known as condensation. If a machine is used while it has condensation on it, it is possible that it will become unable to copy images. For this reason, when moving the machine from a cold environment to a warm one, prior to installation, it is recommended that the machine be allowed to sit in its packing material for at least an hour or more in order for it to warm up to room temperature.

The steps for unpacking and installing this unit are outlined below.

A. Open the packaging and remove the packing materials.
B. Install the cartridge.
C. Load paper into the cassette.
D. Load paper into the multi-feeder.
E. Attach the tray and the power cord.
F. Check the copy image.
G. Set up the fax function (for those machines equipped with a fax function).

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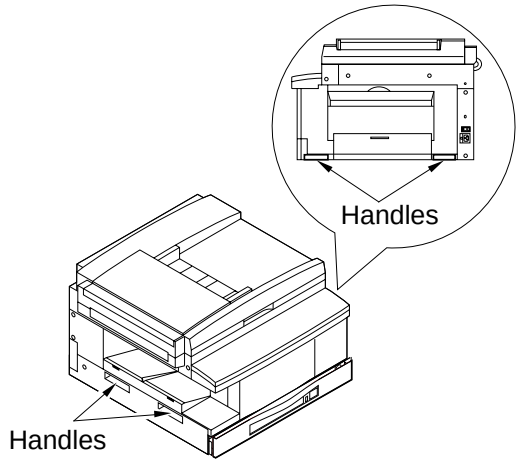
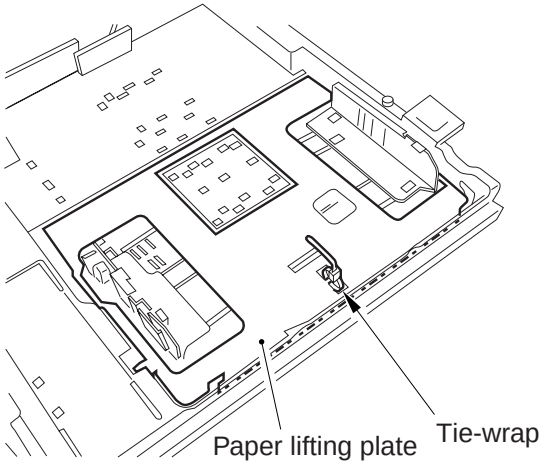
# A. Opening the package and removing the packing materials

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Unpack the main unit, and take out the accessory parts. | |
| 2 | With at least two people, grasp the handles on the left and right side of the main unit, and lift the unit out. |  |
| 3 | Unfasten the packing materials around the main unit, and remove the plastic, the cushioning materials and the tape. Don't forget to remove the tie-wrap which has been fixed to the cassette's paper lifting plate. |  |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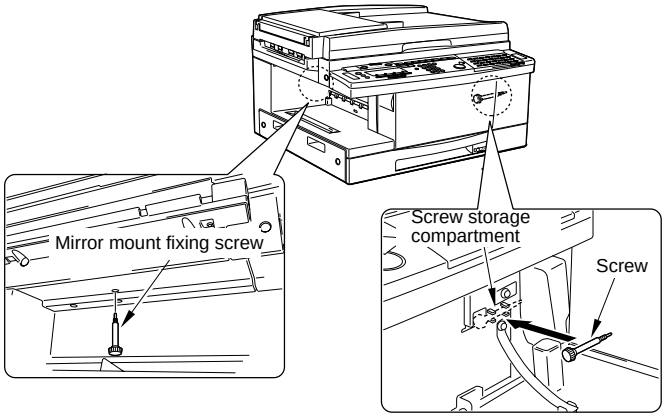
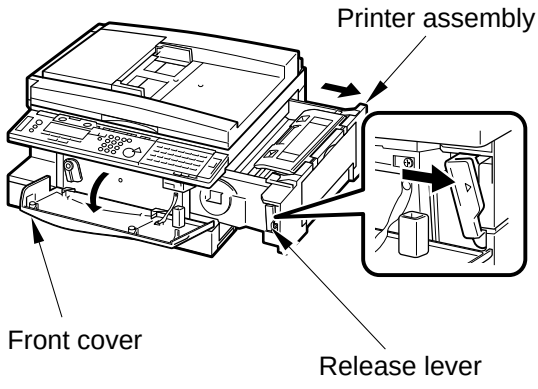
| No. | Work details | Illustration/ remarks |
|---|---|---|
| 4 | Remove the mirror mount fixing screw. Open the front cover of the main unit and put the screw in the storage compartment for safekeeping. |  |
| 5 | Open the automatic document feeder, and remove the filament tape which has a stamp. (Only for those machines which are fitted with an ADF). | One cause of document jams is the ADF is used without the filament tape being removed. Thus, it is very important to remember to remove the filament tape. |

## B. Installing the cartridge

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Lift the cartridge out of the box while it is still in the original packing material. | |
| 2 | Open the front cover of the main unit, and while pressing on the release lever, pull the printer assembly to the right. |  |



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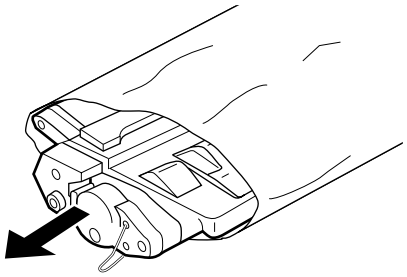
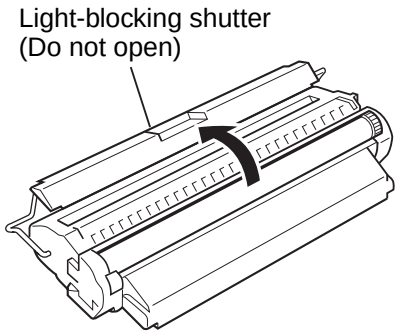
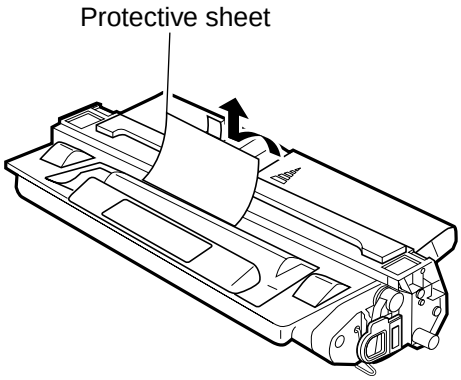
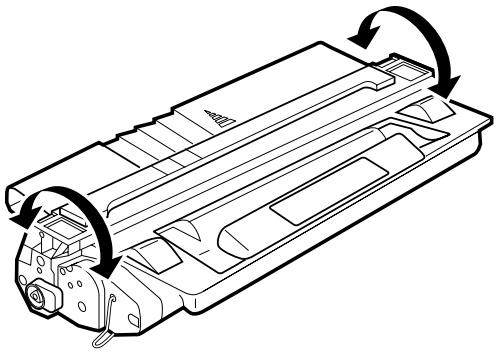
| No. | Work details | Illustration/ remarks |
|---|---|---|
| 3 | Remove the cartridge from the pack. Be sure not to touch or open the light-blocking shutter. |  <br>  |
| 4 | Take the protective sheet off the cartridge. |  |
| 5 | While keeping the cartridge in the position depicted in the figure, using the center as an axis, slowly shake the cartridge in both directions seven or eight times, as if rotating it. |  |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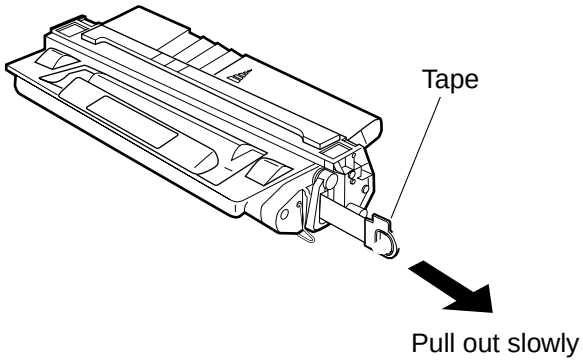
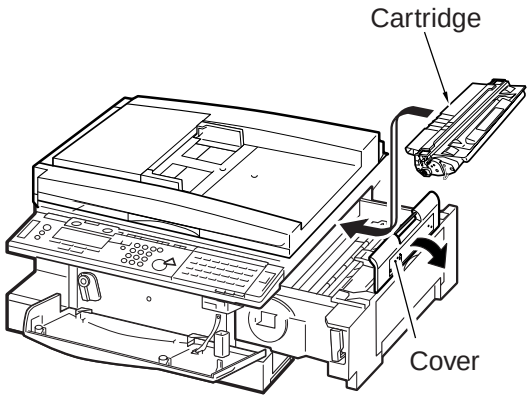
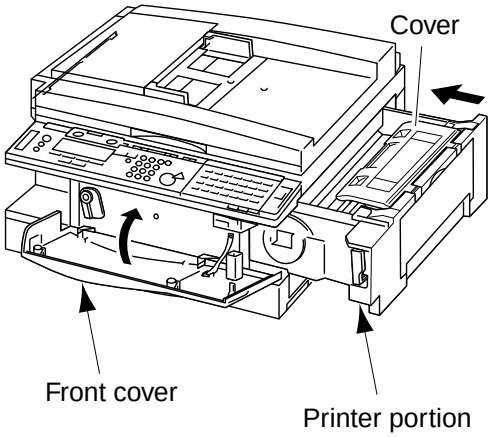
| No. | Work details | Illustration/ remarks |
|---|---|---|
| 6 | While holding the knob, slowly pull the tape out. When removing the tape, place it on a flat level surface, and hold the cartridge firmly. |  |
| 7 | Open the printer assembly cover, and slowly push the cartridge towards the back of the main unit in the direction of the guide arrows, till it can go no further. |  |
| 8 | Close the printer assembly cover, push it back into the main unit, and close the front cover. |  |

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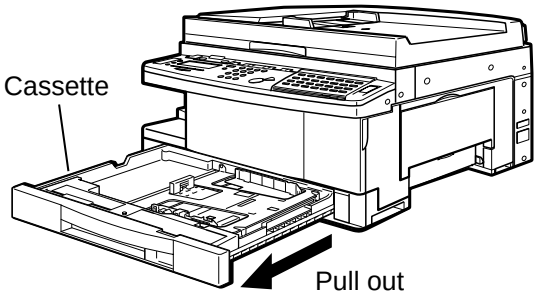
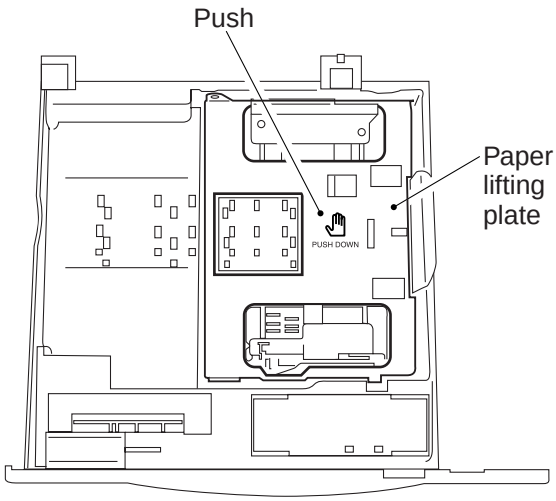
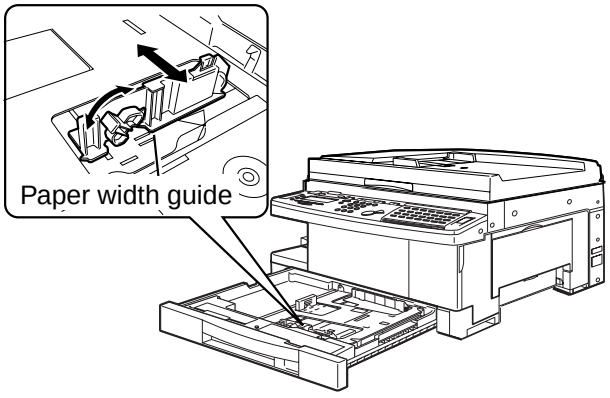
## C. Loading paper into the cassette

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Lift the cassette up a little, and pull it out until it stops. |  |
| 2 | Gently push on the paper lifting plate of the cassette, where it says “PUSH DOWN”. This locks the paper lifting plate into the cassette. |  |
| 3 | Turn the front paper width guide knob to remove the lock, move the guide to match the desired paper width, and turn the knob again to lock it. |  |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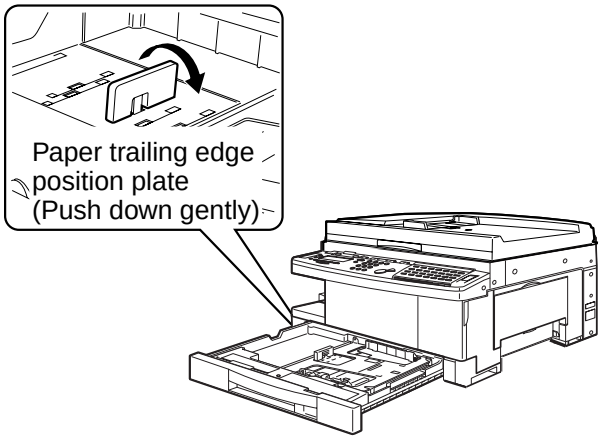
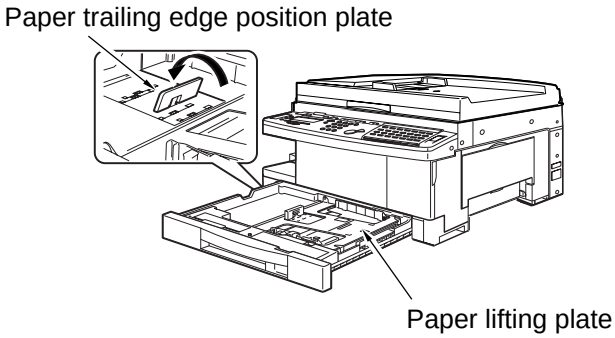
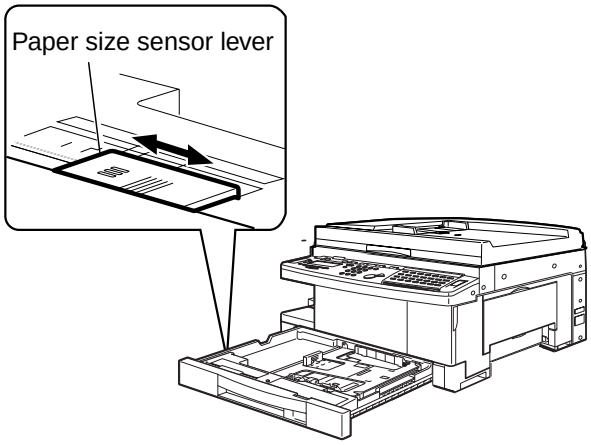
| No. | Work details | Illustration/ remarks |
|---|---|---|
| 4 | Following the △ mark on the paper trailing edge position plate, remove it by pushing it down. Push down gently to avoid damaging the paper trailing edge position plate. |  |
| 5 | Re-install the paper trailing edge position plate to fit the desired paper size, by reversing the process outlined above. |  |
| 6 | Adjust the position of the paper size sensor lever to fit the desired paper size. |  |



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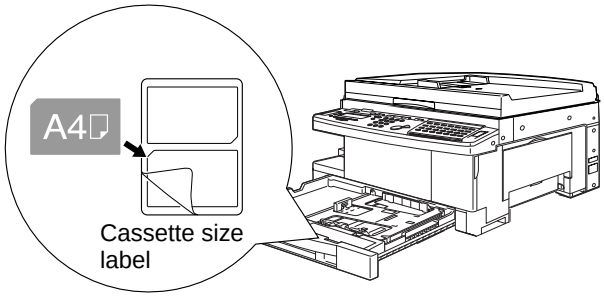
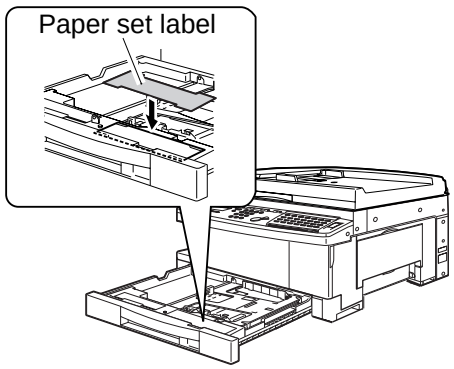
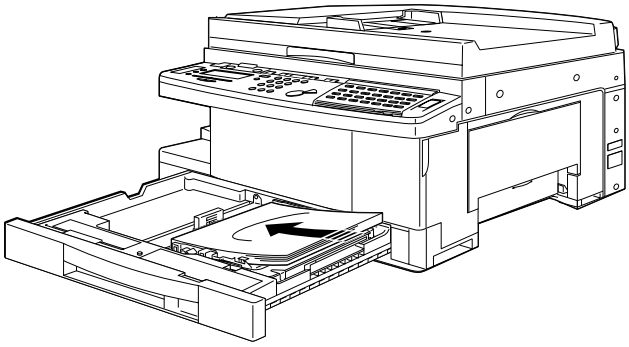
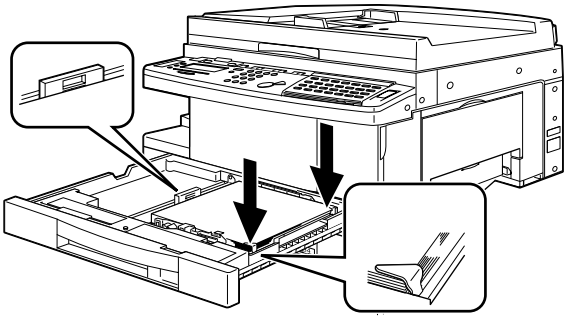
| No. | Work details | Illustration/ remarks |
|---|---|---|
| 7 | Remove the protective plastic sheet from the paper size plate, affix the correct paper size label on the cassette. |  |
| 8 | Attach the Paper Set label to the cassette, making sure that the face with the instructions in the appropriate language is in view. |  |
| 9 | After making the edges of the paper stack even, place the paper in the cassette.<br>**Reference:**<br>When the cassette is inserted into the main unit while the paper lifting plate is in the locked position, the lock is automatically released.<br>If the lock is accidentally released, once again, softly push on the cassette's paper lifting plate, where it says "PUSH DOWN". When the paper lifting plate is locked, place the paper in the cassette. |  |
| 10 | Confirm that the cassette tabs are holding the edges of the paper in place. |  |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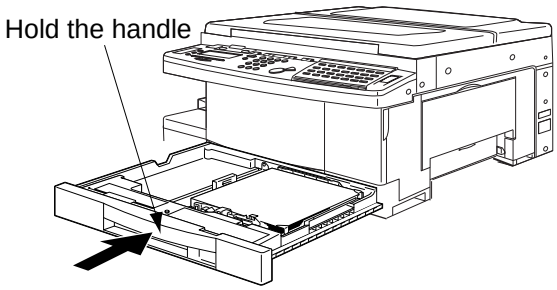
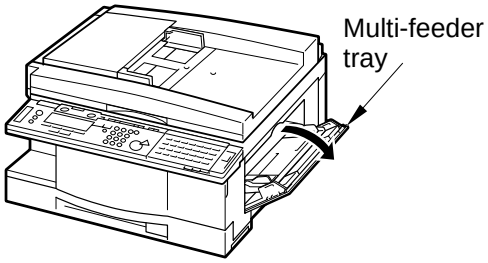
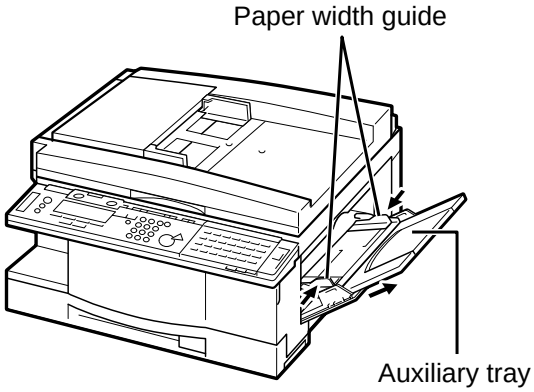
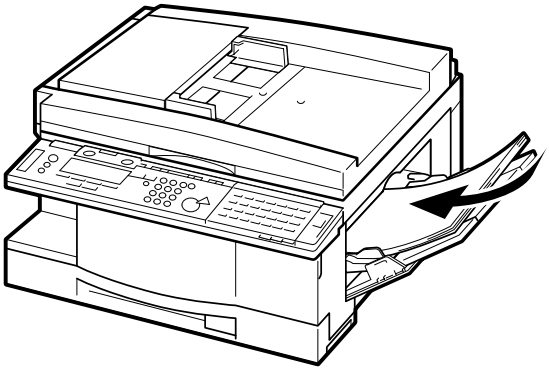
| No. | Work details | Illustration/ remarks |
|---|---|---|
| 11 | While holding the cassette by the center handles, gently insert the cassette into the main unit until it goes no further. Do not insert the cassette while holding on to the cassette on one side only. |  |

## D. Loading paper into the multi-feeder

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Open the multi-feeder. |  |
| 2 | Set the paper width guide and the auxiliary guide to fit the width and the length of the desired paper. |  |
| 3 | After making the edges of the paper stack even, place the paper in the multi-feeder. |  |

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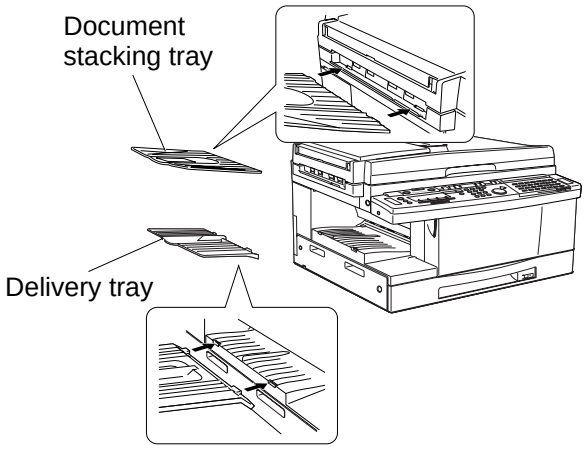
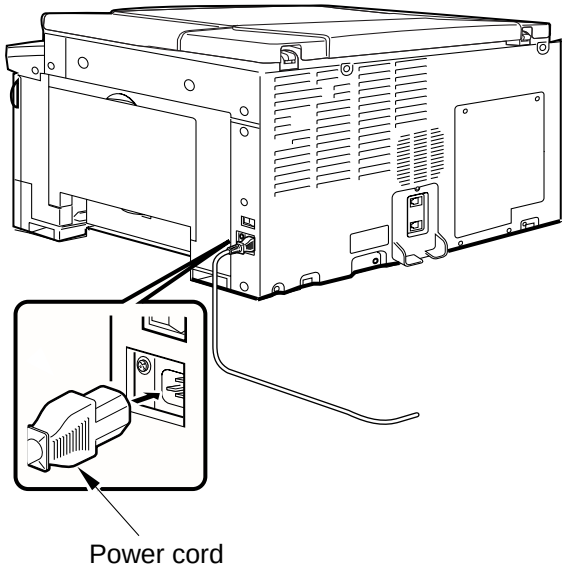
| No. | Work details | Illustration/ remarks |
|---|---|---|
| 4 | Adjust the paper width guide to the width of the paper.<br>Be sure to not press down on the paper width guide. | |

## E. Attaching the tray/Power cord

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Install the delivery tray provided. |  |
| 2 | Attach the included power cord to the AC inlet of the main unit. |  |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## F. Checking the Copy image

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Connect the power cord to an AC power outlet, and turn on the power switch. | |
| 2 | Set the document on the glass or in the automatic document feeder, and make a copy, using either the cassette feeder or the multi-feeder. Confirm the copy image is correct. | |
| 3 | Clean the area surrounding the machine. | |

## G. Setting the Fax machine function

For those machines which have been equipped with the fax functions only.

### 1. Executing an all-clear

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Press the Registration/Set Key → # key. This displays the service mode screen. | Service mode screen<br>**SERVICE MODE**<br>**# 1 SSSW** |
| 2 | Using the shift keys ▲ ▼, select #8 CLEAR, and press the SET key. This will display the #8 CLEAR screen. | #8 CLEAR screen<br>**# 8 CLEAR**<br>**TEL** |
| 3 | Using the shift keys ▲ ▼, select ALL, and press the SET key. This activates the all-clear function. | |



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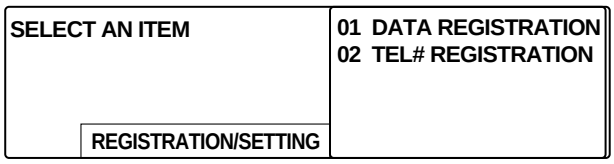
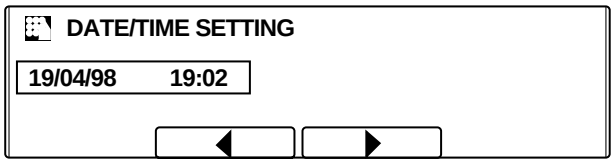
## 2. Setting the date and time (User mode operation)

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Press the Data Registration Key to display the user mode screen. | User mode screen   |
| 2 | Confirm that 01 DATA REGISTRATION has been selected, and press the Set key. | |
| 3 | Confirm that 01 USER SETTINGS has been selected, and press the set key. | |
| 4 | Confirm that 01 DATE/TIME SETTING has been selected, and press the set key. The date and time which had been previously set will be displayed. |   |
| 5 | Enter the current date and time. Use the shift keys ◀▶ to move the cursor to enter the desired numbers. | |
| 6 | Press the set key. This sets the date and time. | |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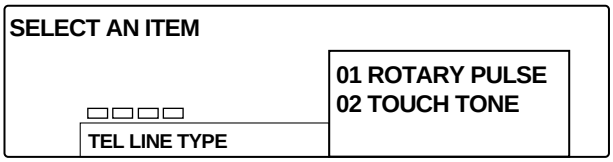
## 3. Setting the dialing method

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Press the Data Registration Key to display the user mode screen. | |
| 2 | Confirm that 01 DATA REGISTRATION has been selected, and press the set key. | |
| 3 | Confirm that 01 USER SETTINGS has been selected, and press the set key. | |
| 4 | Use the shift keys ▲ ▼ to select 11 TEL LINE TYPE, and press the set key. |  |
| 5 | Use the shift keys to select either 01 ROTARY PULSE or 02 TOUCH TONE, and press the set key. | |

## 4. Communications test

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Press the fax key located on the control panel to activate the fax mode. If the fax mode is already activated, this step may be skipped. | |
| 2 | Press the hook key located on the control panel, and confirm that a dial tone can be heard. | If a dial tone cannot be heard, please check the line. |
| 3 | Send and receive documents, and confirm the machine operation and document image. | When there is a communications problem, please follow the steps outlined below in the reference section, and adjust the output level and the NL. |

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## 5. Adjusting the output level

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Press the Data Registration Key → # key. This displays the service mode screen. | |
| 2 | Using the shift keys ▲ ▼, select #2 MENU, and press the SET key. This will display the #2 MENU screen. | |
| 3 | Using the shift keys ▲ ▼ select 007, and press the SET key. | |
| 4 | Use the shift keys ▲ ▼ to change the parameters, and press the SET key. | |

## 6. Adjusting the NL

| No. | Work details | Illustration/ remarks |
|---|---|---|
| 1 | Press the Data Registration Key → # key. This displays the service mode screen. | |
| 2 | Using the shift keys ▲ ▼ select #2 MENU, and press the SET key. This will display the #2 MENU screen. | |
| 3 | Using the shift keys ▲ ▼ select 005, and press the SET key. | |
| 4 | Use the shift keys ▲ ▼ to select either OFF or ON, and press the SET key. | |


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# CHAPTER 12

# MAINTENANCE AND INSPECTION

This chapter explains the maintenance parts and inspection procedures for this machine.


I. PERIODIC REPLACEMENT PARTS.....12-1
II. ESTIMATED LIFESPAN OF CONSUMABLE PARTS .....12-1
III. BASIC SERVICING PROCEDURES .....12-2
IV. CARTRIDGE STORAGE AND HANDLING.....12-3
A. Storage when the packing seal is intact .....12-3
B. Storage and handling when the packing seal has been opened .....12-4



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# I. PERIODIC REPLACEMENT PARTS

There are no parts in the unit that need to be periodically replaced.

# II. ESTIMATED LIFESPAN OF CONSUMABLE PARTS

It may be necessary to replace parts due to wear or damage more than once during the warranty period. The expected life (number of pages) of parts that do not need to be replaced until they fail is indicated below.

As of January, 1999

| no. | Part Name | Part No. | Number of parts | Estimated Number of Pages Copied | Remarks |
|---|---|---|---|---|---|
| 1 | Fixing assembly | FG6-1259-000 | 1 | 150,000 | |
| 2 | Transfer corona assembly roller | RG5-3527-000 | 1 | 150,000 | |
| 3 | Paper feed roller | RB2-1821-000 | 2*1 | 200,000 | |
| 4 | Separation roller, transport roller | RF5-2490-000 | 1 each *2 | 200,000 | |
| 5 | Multi-feeder paper feed roller | RB2-1820-000 | 1 | 200,000 | |
| 6 | Multi-feeder separation pad | RF5-2400-000 | 1 | 200,000 | |
| 7 | Exhaust fan | RH7-1354-000 | 1 | 25,000 hours | 25,000 hours is 3 years of 24-hour continuous power supply |

*1 A total of 4, including the main unit and a single level cassette feeder
A total of 8, including the main unit and a three-level cassette feeder

*2 A total of 4, including the main unit and a single level cassette feeder (2 separation rollers and 2 transport rollers)
A total of 8, including the main unit and a three-level cassette feeder (4 separation rollers and 4 transport rollers)

**Table 12-201**

**Caution:**

The information in the table above is only an estimate, and may be revised in the light of empirical data.

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# III. BASIC SERVICING PROCEDURES

This product has no areas which require periodic service. However, in order to extend the life of the product and parts, we recommend the following procedures be carried out when carrying out service to replace consumable parts.

| No. | Procedure | Inspection Items | Remarks |
|---|---|---|---|
| 1 | Greet the customer | Consult about the machine's condition | |
| 2 | Test copy | a. Image density<br>b. Soiled background<br>c. Character clarity<br>d. Leading edge margin<br>e. Fixing, faulty synchronization, soiled reverse side | |
| 3 | Clean the optical unit | | Clean with a blower brush. When very soiled, use an alcohol cleaner. Wipe the white reference plate with a dry cloth. |
| 4 | Clean the transfer guide | | Remove the cartridge before servicing. |
| 5 | Clean the separation and transport parts<br>• Separation static charge eliminator<br>• Transport belt | | |
| 6 | Clean the fixing and delivery assemblies<br>• Fixing assembly inlet guide | | |
| 7 | Clean the copy board glass | | |
| 8 | Make a test copy | | |
| 9 | Tidy up around the unit | | |

**Table 12-301**


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# IV. CARTRIDGE STORAGE AND HANDLING

Cartridges are constantly influenced by the surrounding environment whether the packaging is sealed or opened, or the cartridge is installed in the main unit. The cartridge will deteriorate over time regardless of the number of pages copied. The pace of this deterioration over time depends on the installed and storage environments. Please take sufficient care when storing and handling the cartridge.

## A. Storage when the packing seal is intact

When cartridges are stored in a warehouse or workshop, do not place them in locations other than those listed in Table 12-401. Also, take heed of the following points.

- Do not store in direct sunlight.
- Do not store in a location subject to strong vibrations.
- Do not handle roughly or drop.

| | | | |
|---|---|---|---|
| Temperature | Normal (90% of the total storage period) | | 0 to 35˚C |
| | Extreme (10% of the total storage period) | Maximum temp. | 35 to 40˚C |
| | | Minimum temp. | -20 to 0˚C |
| Temperature variation (within a 3-minute span) | | | 40˚C to 15˚C<br>-20˚C to 25˚C |
| Humidity | Normal (90% of the total storage period) | | 35 to 85% relative humidity (RH) |
| | Extreme (10% of the total storage period) | Maximum humidity | 85 to 95% RH |
| | | Minimum humidity | 10 to 35% RH |
| Atmospheric pressure | | | 460 to760mmHg (0.1 to 1 atmospheric pressure) |
| Total warranty period | | | About 2.5 years |

**Table 12-401 Temperature and humidity conditions for storage**

**Caution:**

The total warranty period is the period effective from the date of manufacture printed on the cartridge packing box.

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## B. Storage and handling when the packing seal has been opened

The photosensitive drum uses an organic photoconductor (OPC). The photosensitive drum will deteriorate if exposed to strong light. Also, the cartridge contains toner, so please provide customers with adequate explanations of storage and handling methods, and advise them to always store the cartridge in a storage bag.

### 1. Storage environment after the packing seal has been opened

a. Always store in the storage bag.
b. Do not store in direct sunlight, near a window or other bright places. Do not store in an automobile for long periods of time.
   Even when the cartridge is in the storage bag, do not leave it for long periods in direct sunlight or in an automobile.
c. Do not store in extremely high or low temperatures or humidity, or in a location which experiences dramatic changes in temperature or humidity. (For example, next to a heater or air conditioner.)
d. Do not store in a location exposed to corrosive gases (insecticides, etc.) or in a location with air that has a high salt content.
e. Do not store in a location that is very dusty or filled with ammonia or organic solvent fumes.
f. Do not store near computer monitors, disk drives or floppy disks. (The magnetism of the cartridge may damage the data stored in these devices.)
g. Store out of reach of children and infants.
h. Store the cartridge between 0 to 35°C.

### 2. Cartridge shelf life

The shelf life of a cartridge is 2.5 years from the date of manufacture. The production date is displayed in abbreviated form on the cartridge. Also, for customer use, the expiration date , 2.5 years from the date of manufacture, is displayed on the cartridge packing box and on the main packing box. It is preferable to use up the cartridge before the expiration date, because after that date the cartridge image quality deteriorates.


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## 3. Handling

a. When setting the cartridge in the copier, or when blank areas occur in the copy image because toner runs out during copying, hold the cartridge level, as shown in figure 12-401, and shake it several times at about 90Þ in both directions. After the toner inside the cartridge has been leveled evenly, set the cartridge in the copier. If the cartridge is shaken in a manner other than that described above, there is the danger that toner may leak from the developing assembly and cleaning assembly.

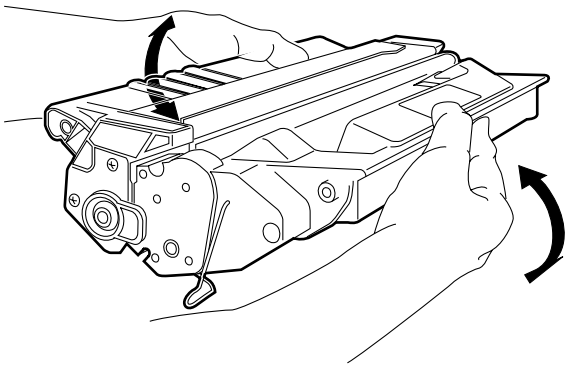

**Figure 12-401**

In order to completely prevent output image stains due to toner leakage, be sure to make 3-5 test copies after setting the cartridge in the copier.

b. As shown in Figure 12-402, do not hold the cartridge vertically or upside down. Also, do not wave it about.

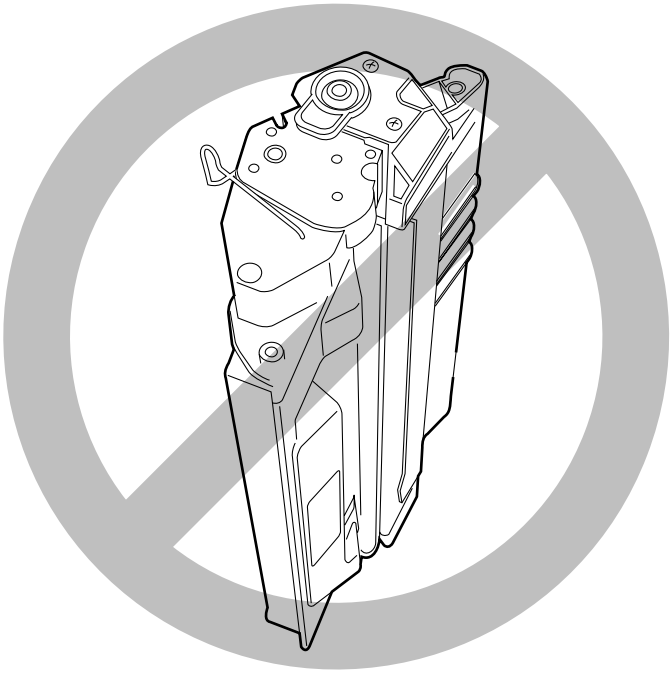

**Figure 12-402**



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c. Do not manually open the shutter of the photosensitive drum on the bottom of the cartridge. Do not touch the surface of the photosensitive drum.

**Caution:**

If the surface of the photosensitive drum is accidentally soiled, wipe with a polishing cloth dampened with toner. Do not wipe with a dry cloth or clean with solvents.

d. Do not disassemble the cartridge.
e. Do not subject to unnecessary vibration or shock.
   Particularly, do not subject the photosensitive drum to pressure from the top of the photosensitive drum cover shutter.
f. When transporting the copier, remove the cartridge from the main unit. Place the cartridge in the protective bag or wrap in a thick cloth and keep out of direct light.
g. Do not store near computer monitors, disk drives or floppy disks. (The magnetism of the cartridge may damage the data stored in these devices.)
h. Store out of reach of children and infants.
g. The photosensitive drum is sensitive to strong light, so the cartridge is equipped with a light-blocking shutter. However, if subjected to strong light for an extended period of time, white spots and vertical bands may appear on the images. In that case, refraining from use of the machine for as long as possible will result in almost complete recovery. However, in some cases the traces (white spots, vertical bands) may not disappear.
   Please note the following items.

**Caution:**

1. Perform jam removal and cartridge replacement promptly.
2. When the cartridge is removed from the copier and stored, or when using a color cartridge, be sure to place the cartridge in a storage box or cover it with a cloth. Do not leave the cartridge exposed, once removed from the main unit.

h. Instruct the user to return used cartridges to a designated collection center.


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**Caution:**

Do not incinerate used cartridges as there is a risk of bursting or explosion.
When a used cartridge must be disposed of, dispose of it as nonflammable trash.

**Reference:**

The cartridge will perfectly fit for use for copying if placed in darkness for 5 minutes after exposure to 1,500lux intensity light (normal light) for 5 minutes,. However, do not expose the cartridge to direct sunlight. The sun's rays have a light intensity ranging from approximately 10,000lux to 30,000lux.

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# CHAPTER 13

# TROUBLESHOOTING

This chapter describes the main unit's maintenance servicing, standards and adjustments, faulty image countermeasures, machine malfunction countermeasures, feeding malfunction countermeasures, layout and functions of electrical components, the service mode and self-diagnostic mechanisms.

This chapter contains illustrations of a copier with automatic document feeder (ADF) attached.

For information regarding the ADF mechanism, refer to the appended ADF-H1 service manual.


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**Reading the procedure chart**

The procedure chart used in this chapter is a general flowchart that has been adapted to table form.

Below is an example and an explanation of how to use it.

Example: No AC power

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Power plug is disconnected | 1 | Is the power plug connected to the outlet? | NO | Plug the power plug into the outlet. |
| A cover is not completely closed | 2 | Is the front cover completely closed? | NO | Close the cover. |
| | | Is the prescribed voltage being supplied to the outlet? | | |
| There is no original power source | 3 | | NO | Explain to the customer that the trouble is not caused by the copier. |
| | | Is the prescribed voltage being supplied between J1-1 and J1-2? (J1 is the power cord mount area.) | | |
| | 4 | | YES | Check from Item 6. |

(The remainder of the table has been omitted.)

- When you only want to know the cause of a malfunction (the name of the part thought to be malfunctioning), refer to the table's Cause column.
  In the case of "AC power source is not being supplied" described above, problems such as an unconnected power plug, incomplete closing of a cover, and no original power source can be considered as causes.
- When you want to repair or know the checking procedure for a malfunction, check the items in the Action column. Answer yes or no to the items in the Items to Check column. If your answer matches the answer in the Result column, then perform the procedure described in the Action column.
  If the answer does not match the Result column, proceed to the next item and check in the same manner.

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# I. STANDARDS AND ADJUSTMENTS

## A. Mechanical system

### 1. Right and left registration adjustment

Check that the front edge image margin of paper fed from each cassette is 2.5 ± 2.0mm.

If the standards are off, adjust according to the procedure described below.

1) Remove the cassette from the cassette level that needs adjustment.
2) Loosen the hex screw and move the adjusting plate back and forth. Adjust by lining up with the 1mm interval scale marks.

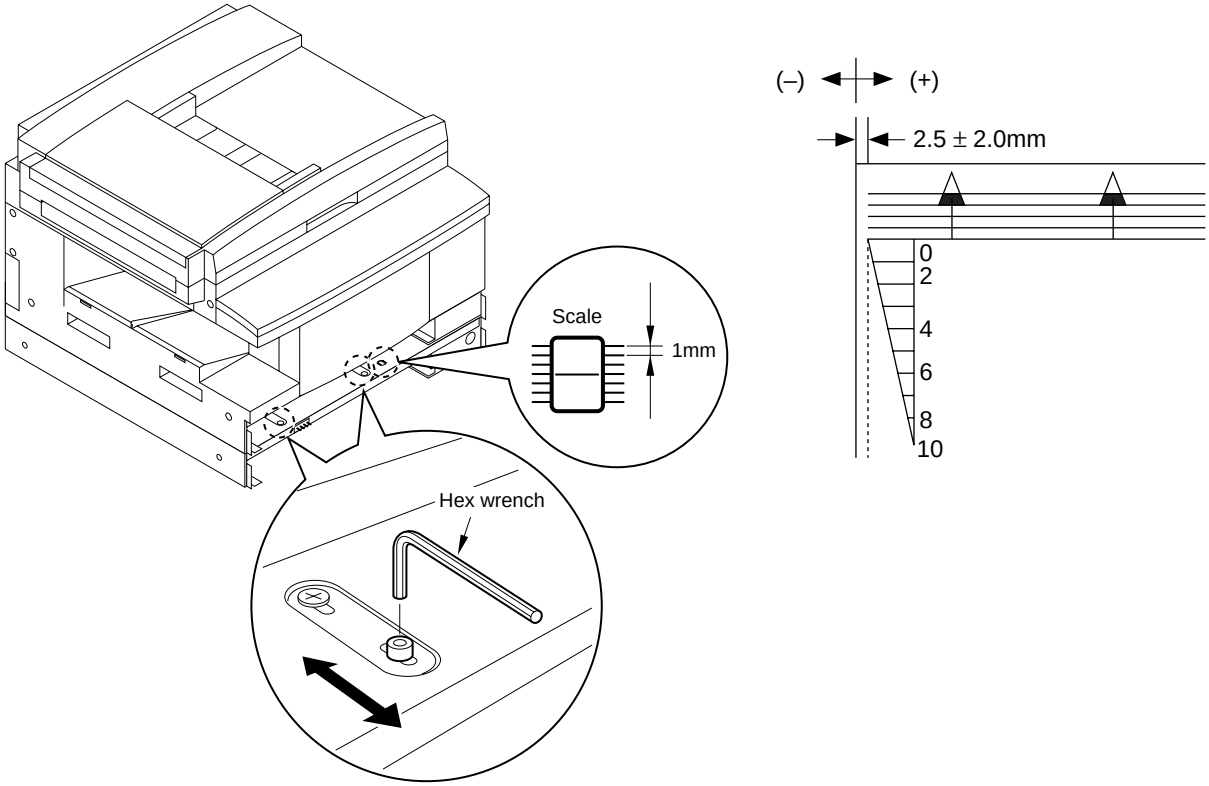


**Figure 13-101**


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## 2. Image leading edge margin adjustment

Adjustment when the leading edge of the printed image is out of alignment.

a) Use a precision screwdriver to press down on SW401 and output a test print.
b) Turn VR401 and adjust the leading edge margin of the test print to 4.0 ± 2.0mm.

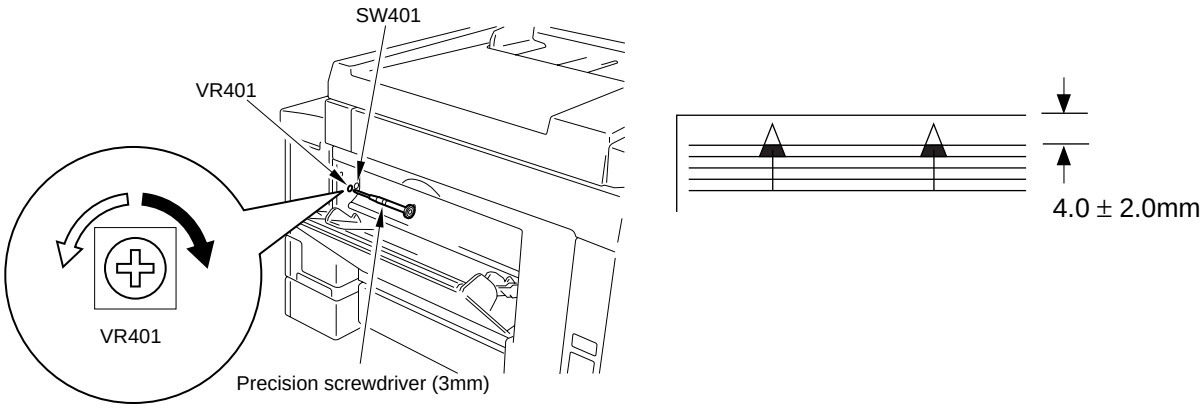


**Figure 13-102**

## 3. Attaching the scanner wire

Attach the wire, following steps 1 to 9. Then perform the mirror positioning adjustment described on the next page.

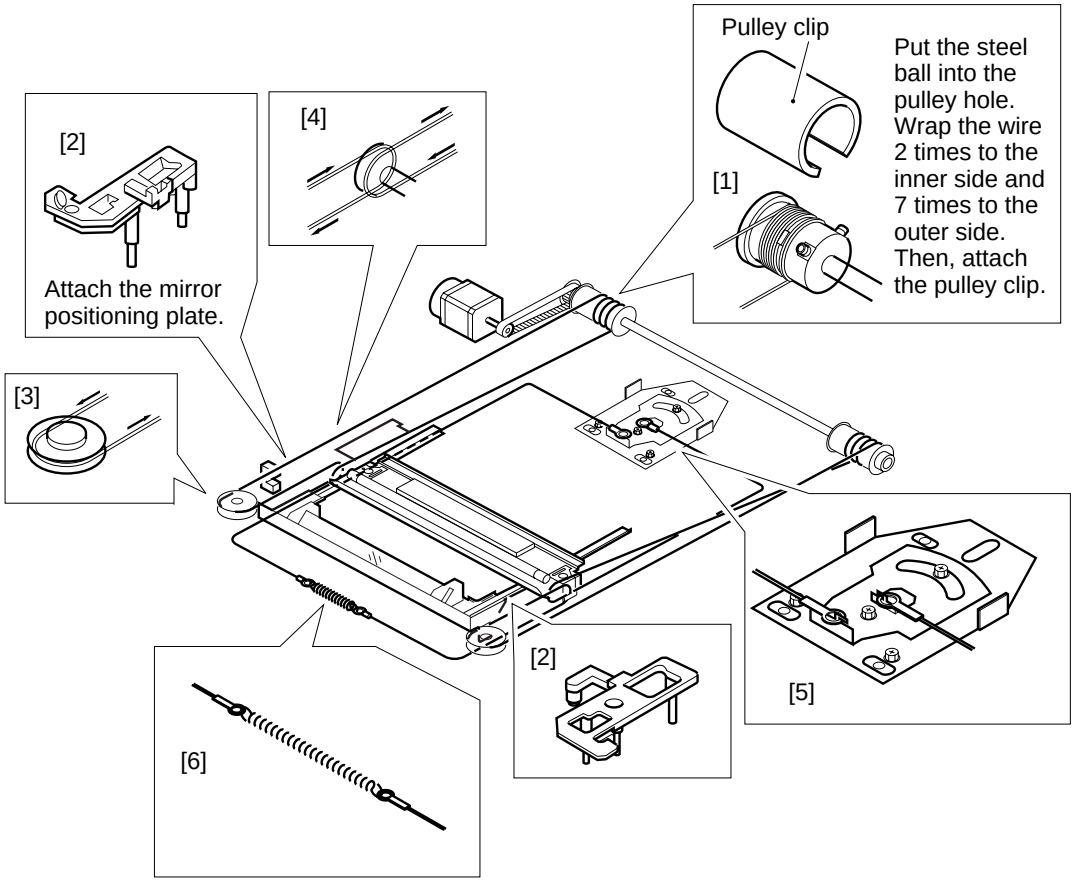
Pulley clip
Put the steel ball into the pulley hole. Wrap the wire 2 times to the inner side and 7 times to the outer side. Then, attach the pulley clip.
[1]
[2]
Attach the mirror positioning plate.
[3]
[4]
[2]
[5]
[6]

**Figure 13-103**

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## 4. Mirror positioning adjustment

a) Adjusting position of No. 2 mirror mount

If the optical section wire pulley's hexagonal fixing nut has been loosened, follow the procedures described below to adjust the position of the No. 2 mirror mount, and then tighten the hexagonal nut.

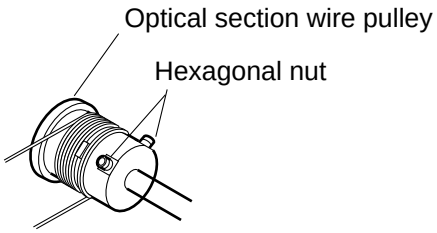
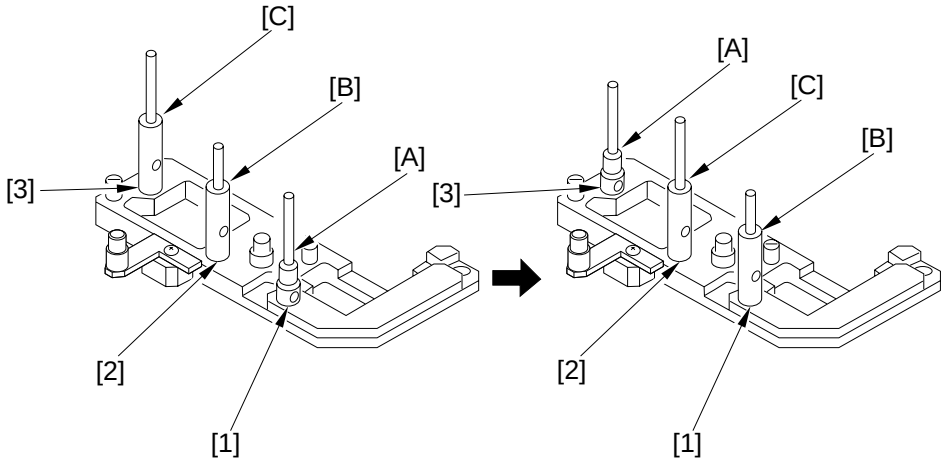


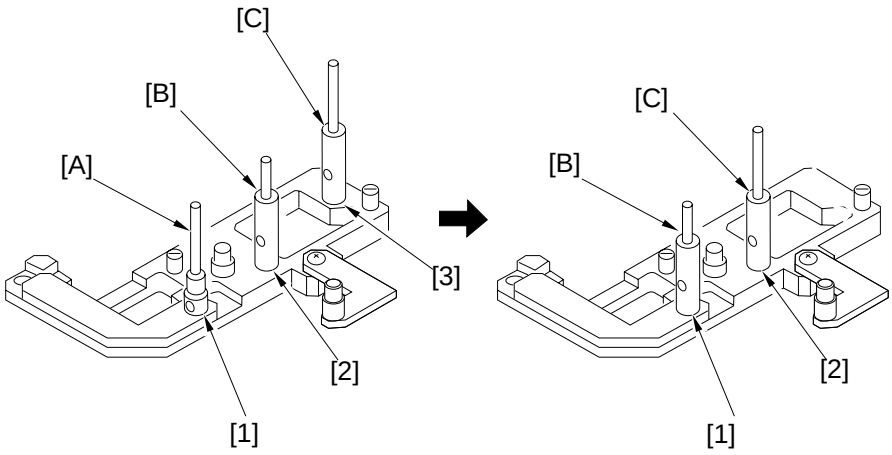

**Figure 13-104**

The mirror positioning tool used in the positioning of the No. 2 mirror mount is illustrated below.




FY9-3009-040 (for rear use)

When used to adjust the No. 2 mirror mount (for rear use)




FY9-3009-040 (for front use)

When used to adjust the No. 2 mirror mount (for front use)

**Figure 13-105**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With the mirror positioning tool fitted in the holes shown below, tighten the optical unit wire pulley's hexagonal fixing nut.

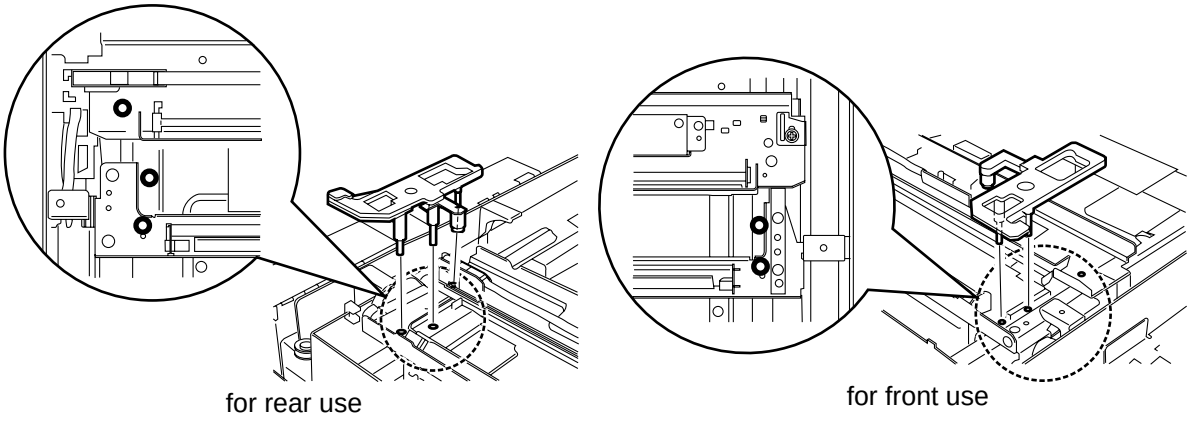


**Figure 13-106**

b) Adjustment of distance between No. 1 and No. 2 mirror mounts

With the optical system wire fixing tool for No. 1 mirror mount loosened, follow the procedures described below to adjust the distance between No. 1 and No. 2 mirror mounts, and then tighten the fixing tool.

This adjustment should be performed after the operation to adjust the position of No. 2 mirror mount, as described above.

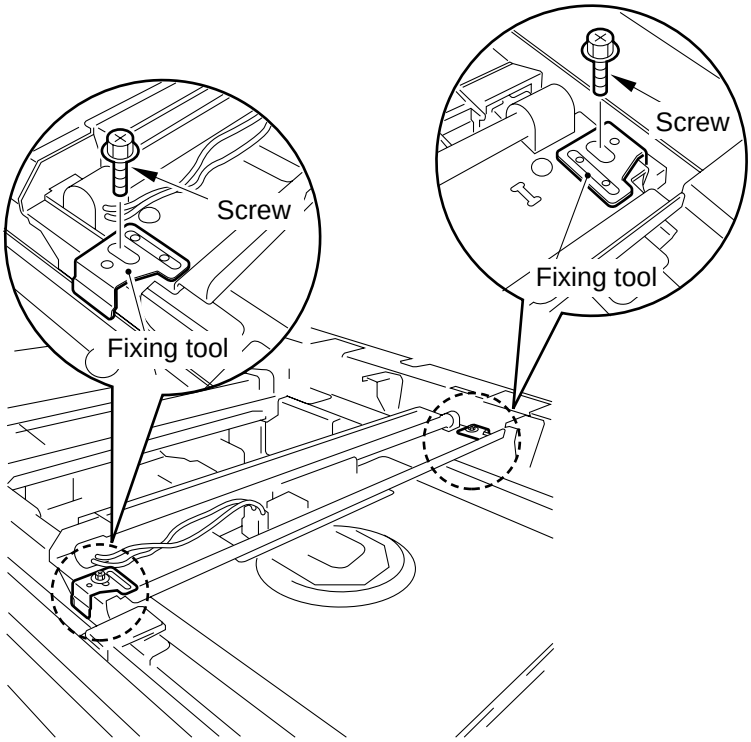


**Figure 13-107**



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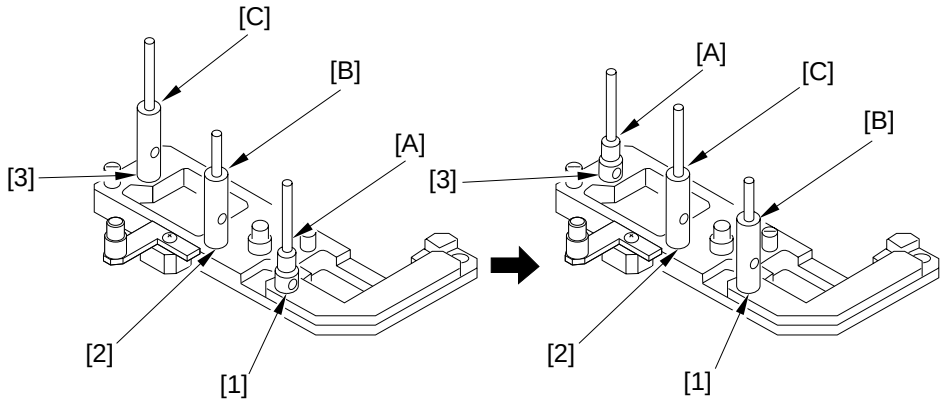
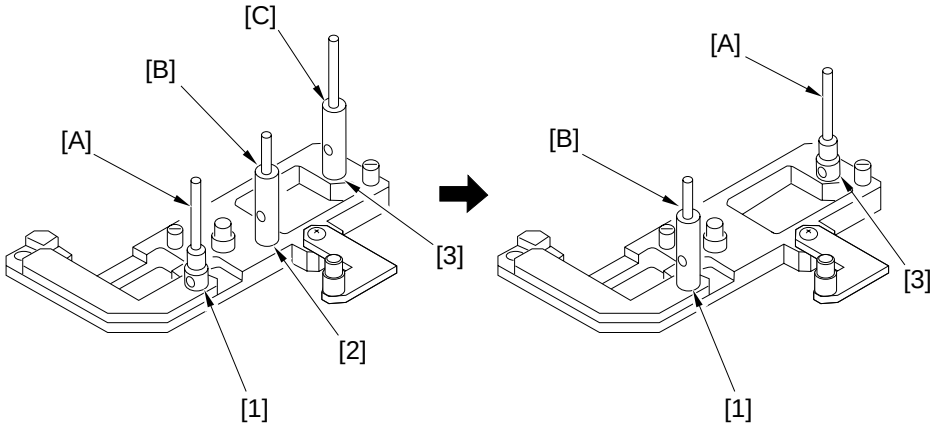
The mirror positioning tool used in the adjustment of the distance between No. 1 and No. 2 mirror mounts is illustrated below.




FY9-3009-040 (for rear use)

When used to adjust the distance between No. 1 and No. 2 mirror mounts (for rear use)




FY9-3009-040 (for front use)

When used to adjust the distance between No. 1 and No. 2 mirror mounts (for front use)

**Figure 13-108**

With the mirror positioning tool fitted in the holes shown below, attach the optical unit wire hexagonal fixing tool.

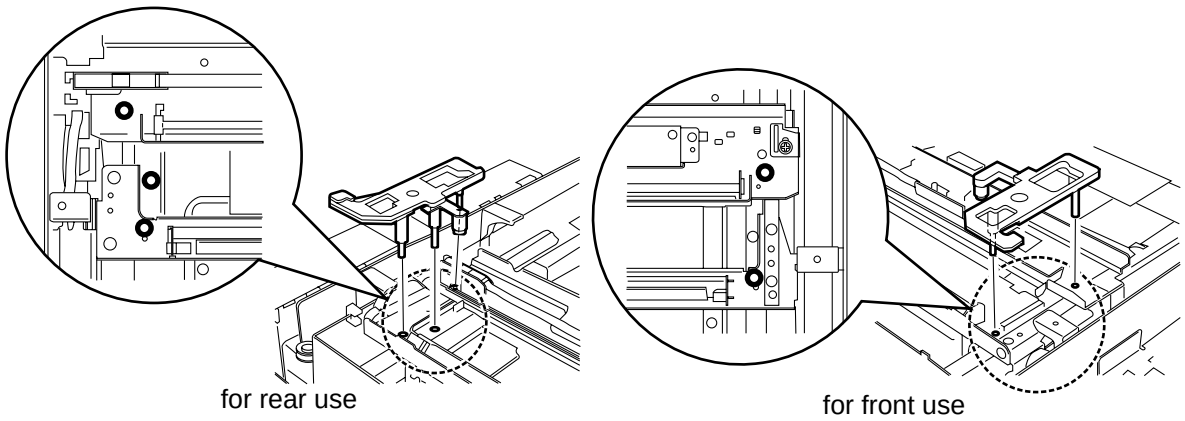



**Figure 13-109**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## 5. Printer unit receptacle connector mount positioning adjustment

When the printer unit receptacle connector is removed or attached, adjust the mount position, following the procedure described below.

1) Loosen the 3 receptacle connector screws.
2) Adjust so that the interval between the printer unit frame and the receptacle connector is 3.5 ± 0.5mm.

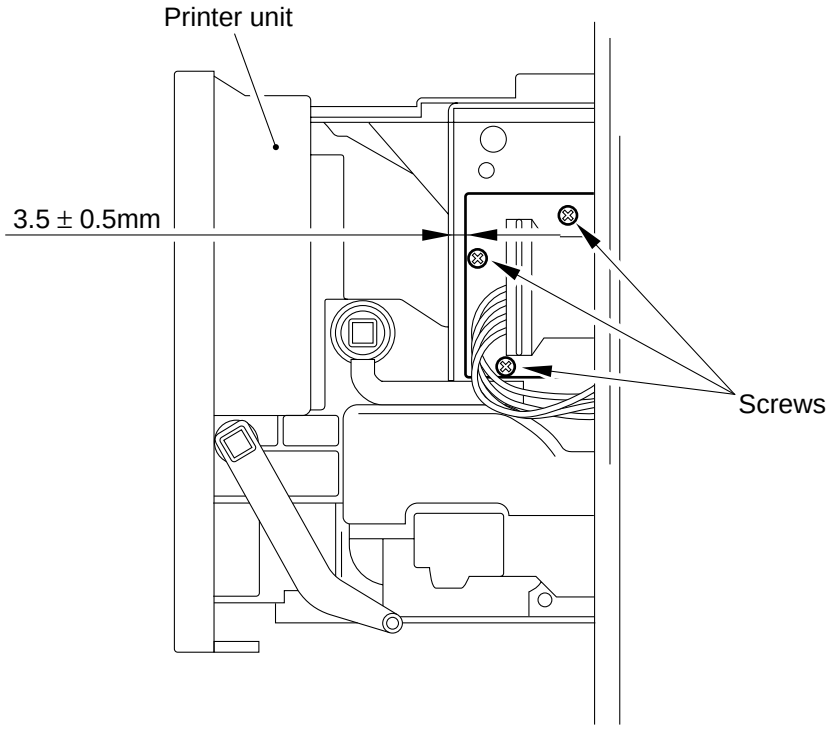


**Figure 13-110**

## 6. Check the pressure (nip width) of the fixing pressure roller

This machine has no adjustment mechanism for the fixing assembly nip width. However, if the nip width is not correct, faulty fixing may occur.

Therefore, check the fixing assembly nip width by following the procedures described below. If the nip width is outside the standards, replace the fixing assembly.

1) Make one solid black copy on size A3 paper.
2) Place the black side of the paper face down and set the solid black copy in the multi-feeder.
3) When the leading edge of the paper comes out into the copy tray, quickly switch off the power source and leave it as is for about 10 seconds.
4) Remove the paper as you would to clear a paper jam from the printer unit.
5) Measure the width of the part of the removed paper that is wet and shiny with toner. Check that the width is within the range displayed in Table 13-101.

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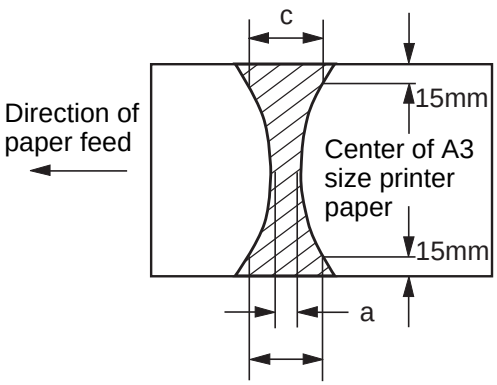


**Figure 13-111**

| | Dimensions |
|---|---|
| a | 5.5 ± 1.0 (mm) |
| \| c - a \| | 1.0 (mm) or less |
| \| b - a \| | 1.0 (mm) or less |
| \| b - c \| | 1.0 (mm) or less |

**Table 13-101**


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## B. Electrical System

Adjustment items for the electrical system include automatic shading correction and image positioning adjustment. When the main parts listed for each below are replaced, perform adjustments.

- When the scanning lamp is replaced: automatic shading adjustment
- When the CCD unit is replaced: automatic shading adjustment
- When the image processor circuit board is replaced: image positioning adjustment, automatic shading adjustment

### 1. Automatic shading adjustment

1) Open the 3 covers of the control panel's one-touch panel. Set the slide switch ON
2) Enter the service mode and select TEST MODE. (See page 13-111)
3) Press 2 on the control panel's numeric keypad. (TEST MODE": CCD will be selected.)
4) When you press 8 on the numeric keypad, automatic shading adjustment will start.
5) When OK is displayed on the display, the adjustment is finished.
6) After pressing the control panel stop key, press the clear key. (To exit TEST MODE.)
7) Turn the control panel slide switch OFF.

### 2. Image positioning adjustment

1) Make a test chart with marks every 1cm from the leading and left edges of the page, as shown in the figure below.

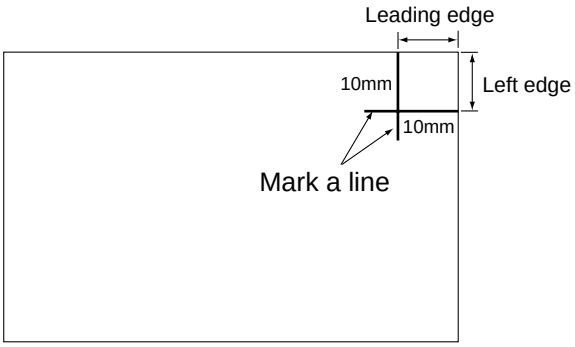


**Figure 13-112**



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2) Select 9.BOOK from service mode #6 SCANNER. Set 1 in 018.
3) Set the test chart you made on the copyboard glass with the image facing down.

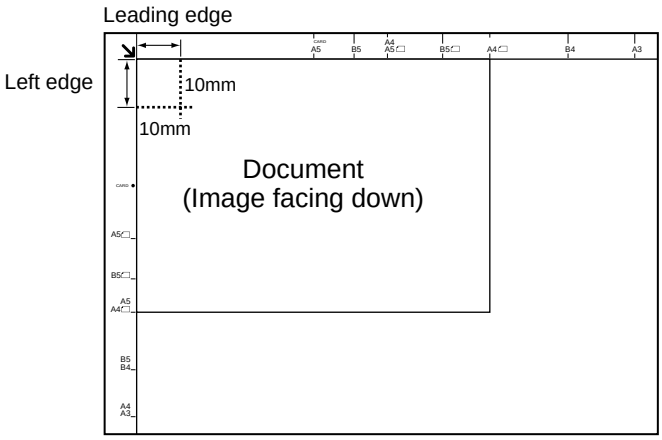


**Figure 13-113**

4) Copy the image enlarged to 400%.
5) Measure the length of the leading and left edges of the copied image (see the figure below).

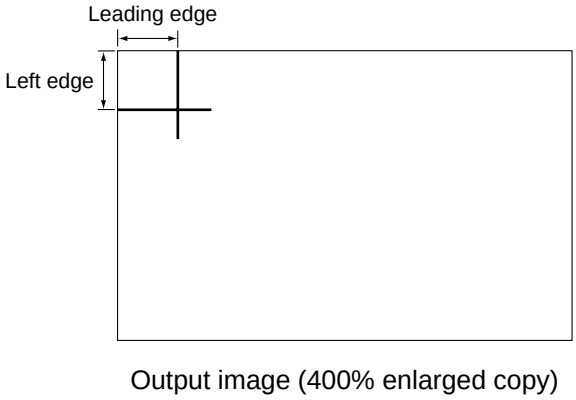


**Figure 13-114**

6) Refer to Table 13-102. Work out the input value that corresponds to the measurement taken in step 5.
7) Select 8. CCD from service mode #6 SCANNER. Enter the value worked out from the leading edge data, 007, and the left edge data, 010 in step 6).
8) Select 9.BOOK from service mode #6 SCANNER. Set 1 in 018.
9) Exit service mode. Copy the image at 100%. Check that the copied image and the original document positioning matches.


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| Feed direction (leading edge) | |
|---|---|
| Actual measurement | Input measurement |
| 30.0 | 41 |
| 31.0 | 40 |
| 32.0 | 39 |
| 33.0 | 38 |
| 34.0 | 37 |
| 35.0 | 36 |
| 36.0 | 35 |
| 37.0 | 34 |
| 38.0 | 33 |
| 39.0 | 32 |
| 40.0 | 31 |
| 41.0 | 30 |
| 42.0 | 29 |
| 43.0 | 28 |
| 44.0 | 27 |
| 45.0 | 26 |
| 46.0 | 25 |
| 47.0 | 24 |
| 48.0 | 23 |
| 49.0 | 22 |
| 50.0 | 21 |

| Main scanning direction (left edge) | | | |
|---|---|---|---|
| Actual measurement | Input measurement | Actual measurement | Input measurement |
| 30.0 | 118 | 40.2 | 158 |
| 30.3 | 119 | 40.4 | 159 |
| 30.5 | 120 | 40.7 | 160 |
| 30.8 | 121 | 40.9 | 161 |
| 31.0 | 122 | 41.2 | 162 |
| 31.3 | 123 | 41.4 | 163 |
| 31.5 | 124 | 41.7 | 164 |
| 31.8 | 125 | 41.9 | 165 |
| 32.0 | 126 | 42.2 | 166 |
| 32.3 | 127 | 42.4 | 167 |
| 32.5 | 128 | 42.7 | 168 |
| 32.8 | 129 | 43.0 | 169 |
| 33.0 | 130 | 43.2 | 170 |
| 33.3 | 131 | 43.5 | 171 |
| 33.6 | 132 | 43.7 | 172 |
| 33.8 | 133 | 44.0 | 173 |
| 34.1 | 134 | 44.2 | 174 |
| 34.3 | 135 | 44.5 | 175 |
| 34.6 | 136 | 44.7 | 176 |
| 34.8 | 137 | 45.0 | 177 |
| 35.1 | 138 | 45.2 | 178 |
| 35.3 | 139 | 45.5 | 179 |
| 35.6 | 140 | 45.7 | 180 |
| 35.8 | 141 | 46.0 | 181 |
| 36.1 | 142 | 46.3 | 182 |
| 36.4 | 143 | 46.5 | 183 |
| 36.6 | 144 | 46.8 | 184 |
| 36.9 | 145 | 47.0 | 185 |
| 37.1 | 146 | 47.3 | 186 |
| 37.4 | 147 | 47.5 | 187 |
| 37.6 | 148 | 47.8 | 188 |
| 37.9 | 149 | 48.0 | 189 |
| 38.1 | 150 | 48.3 | 190 |
| 38.4 | 151 | 48.5 | 191 |
| 38.6 | 152 | 48.8 | 192 |
| 38.9 | 153 | 49.1 | 193 |
| 39.1 | 154 | 49.3 | 194 |
| 39.4 | 155 | 49.6 | 195 |
| 39.7 | 156 | 49.8 | 196 |
| 39.9 | 157 | 50.0 | 197 |

Actual measurement: value of markings on image enlarged to 400%
Input measurement: value input in service mode.

**Table 13-102**

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### 3. Sensor check

Assessment of the status of the photo-interrupter is performed by the SENSOR test in the TEST MODE. The procedure is as described below.

1) On the control panel, press the Entry/Setting key, then the # key to enter the service mode.
2) Press the shift keys (up arrow, down arrow) to select TEST MODE.
3) Press 6 on the numeric keypad to select FACULTY TEST.
4) Press 3 on the numeric keypad to enter sensor check mode. The image below will be displayed.

**Figure 13-115**

5) When the display shown in Figure13-110 is displayed, push 1,2,3 and 4 on the numeric keypad. The status of each sensor will be displayed. The following is an example and explanation of what happens when you push 1 on the numeric keypad.

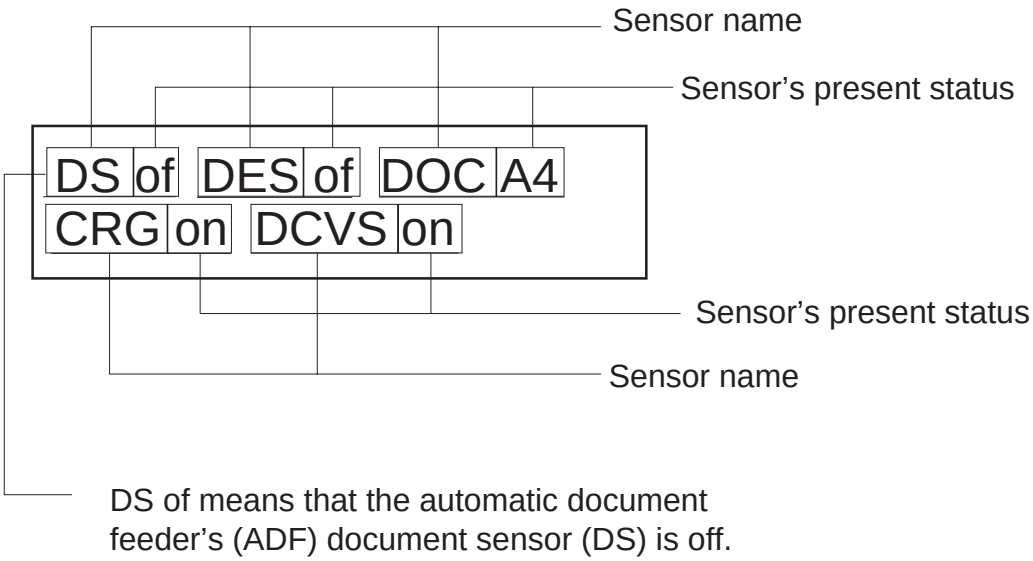
Sensor name
Sensor's present status
DS of DES of DOC A4
CRG on DCVS on
Sensor's present status
Sensor name
DS of means that the automatic document feeder's (ADF) document sensor (DS) is off.

**Figure 13-116**

6) Move each sensor's flag and verify that the display shows of (OFF)/on (ON) repeatedly.
The following page shows the display and sensor name, and the status of each sensor when the main unit is in stand-by when keys 1-4 of the numeric keypad are pressed.


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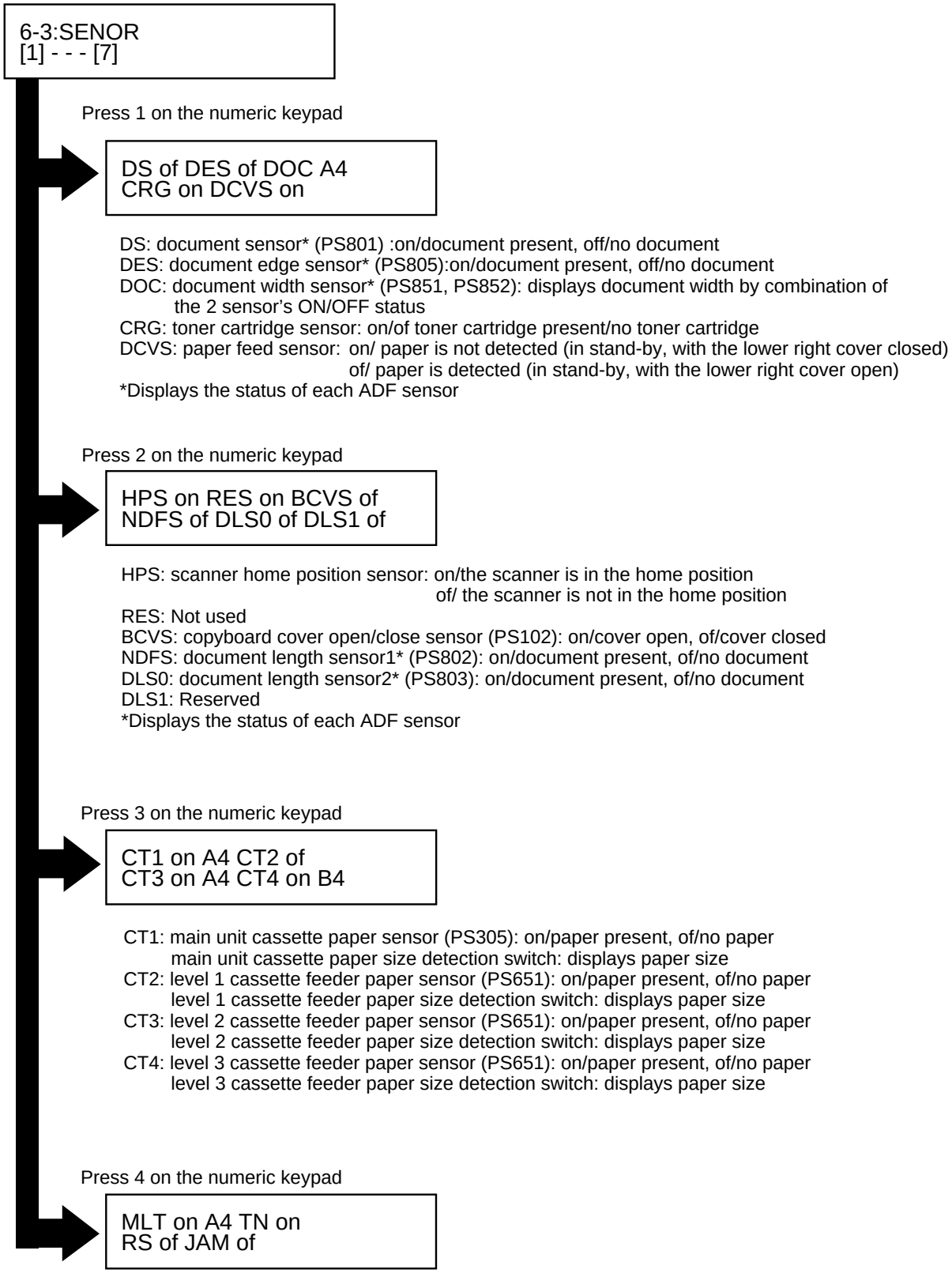
6-3:SENOR
[1] - - - [7]
Press 1 on the numeric keypad
DS of DES of DOC A4
CRG on DCVS on
DS: document sensor* (PS801) :on/document present, off/no document
DES: document edge sensor* (PS805):on/document present, off/no document
DOC: document width sensor* (PS851, PS852): displays document width by combination of the 2 sensor's ON/OFF status
CRG: toner cartridge sensor: on/of toner cartridge present/no toner cartridge
DCVS: paper feed sensor: on/ paper is not detected (in stand-by, with the lower right cover closed)
of/ paper is detected (in stand-by, with the lower right cover open)
*Displays the status of each ADF sensor
Press 2 on the numeric keypad
HPS on RES on BCVS of
NDFS of DLS0 of DLS1 of
HPS: scanner home position sensor: on/the scanner is in the home position
of/ the scanner is not in the home position
RES: Not used
BCVS: copyboard cover open/close sensor (PS102): on/cover open, of/cover closed
NDFS: document length sensor1* (PS802): on/document present, of/no document
DLS0: document length sensor2* (PS803): on/document present, of/no document
DLS1: Reserved
*Displays the status of each ADF sensor
Press 3 on the numeric keypad
CT1 on A4 CT2 of
CT3 on A4 CT4 on B4
CT1: main unit cassette paper sensor (PS305): on/paper present, of/no paper
main unit cassette paper size detection switch: displays paper size
CT2: level 1 cassette feeder paper sensor (PS651): on/paper present, of/no paper
level 1 cassette feeder paper size detection switch: displays paper size
CT3: level 2 cassette feeder paper sensor (PS651): on/paper present, of/no paper
level 2 cassette feeder paper size detection switch: displays paper size
CT4: level 3 cassette feeder paper sensor (PS651): on/paper present, of/no paper
level 3 cassette feeder paper size detection switch: displays paper size
Press 4 on the numeric keypad
MLT on A4 TN on
RS of JAM of
MLT: multi-feeder paper sensor (PS501): on/paper present, of/no paper
Displays A4/set paper size.
TN: toner sensor: on/toner remaining, of/no toner
RS: Reserved
JAM: jam detection status: on/jam detected, of/no jam detected

**Figure 13-117**

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## 4. Image processor PCB replacement procedures

The procedures which must be performed when replacing the image processor PCB are described below.

### ■ Procedures performed at the time of replacement

- For machines with a FAX function, output system data list, one-touch/speed dial/group dialing list, user data list, activity management report and system dump list.
- For machines with a FAX function, output all transmitted and received images.
- Turn off the power switch and remove jumper plug (JP3) before replacing the PCB.
- If additional memory has been added, remove the memory after removing jumper plug JP1 from the image processor PCB.
- Remove the ROM DIMM.

**Caution:**

When the jumper plug (JP3) is removed, all the data recorded in the control memory are erased. Accordingly, when the jumper plug (JP3) is to be removed, make sure the control data have been printed out.

- User data: data that are set when the user presses the control panel's entry/setting key
- Service mode data: setting data for the service mode
- Management data: activity management record (the previous 40 transactions), system dump record

### ■ Procedures performed after replacement

- Install ROM DIMM.
- Install additional memory. When installing additional memory, do it when the jumper plug (JP1) is removed from the image processor PCB, or when it is in the OFF position.
- Set jumper plug JP1 to the ON position.
- Attach the jumper plug (JP3) that was removed prior to replacement of the PCB.
- Turn on the main unit power switch. If DATA ERROR is displayed, press the set key on the control panel.
- Input the user data and service mode data.
- See page 13-9. Perform automatic shading correction and image positioning adjustment.


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# II. IMAGE AND MACHINE MALFUNCTION COUNTER-MEASURES

## A. Initial check

### 1. Setting environment

a. Power voltage is maintained the rated voltage ± 10V. (The power cord should not be disconnected at night.)
b. Do not place in a location subject to high temperature and humidity (near a water faucet, hot water heater, or humidifier), a cold location, near naked flame or in a dusty location.
c. Do not place in an area with ammonia fumes.
d. Do not place in direct sunlight. When it is not possible to avoid this, advise the user to hang curtains on the window or take other measures to reduce the light.
e. Choose a well-ventilated location
f. Choose a location where the machine will sit level
g. The machine should be supplied with power 24 hours a day. Check that the machine is placed in a location that fulfills the conditions cited above.

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## 2. Check the document for symptoms of trouble

Check if the cause of trouble is with the document or with the machine.

a. Copy density correction is appropriate at a? graduation of 5+/-1.?
b. It is difficult to get satisfactory contrast on a red background.
   Example; red sheet or accounting sheet
c. Check the document density
   Example;
   Document is a diazo copy
   Document with transparency } …Easily mistaken for fogging

Documents written in light pencil are easily mistaken as being too faint images.

## 3. Check if there is dirt or scratches on the copyboard cover, copyboard glass or the white reference plate

If there is dirt, clean with a mild detergent or alcohol. If there are scratches, replace the scratched part.

## 4. Check the cartridge

If the surface of the photosensitive drum is scratched, replace the cartridge.

## 5. Check the paper

a. Is Canon recommended paper being used?
b. Is the paper damp?
   Load new packing paper and make a test copy.

## 6. Other

In winter, especially upon installation, sometimes moisture condensation occurs within the machine and causes various problems when a machine is suddenly moved from a cold warehouse and set in a warm room.

Example;

a. The image becomes faint due to moisture condensation in the scanning assembly (glass, mirror, lens, etc.)
b. Leak current develop from condensation in the charging assembly.
c. Paper jams occur due to condensation of the pick-up and feeder guides.

When condensation occurs, wipe the parts dry and leave the machine supplied with power for 60 minutes.


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## B. Treatment procedures by faulty image type

Before looking for the cause of printing failure, check that the user is using recommended paper which is stored in a proper environment. When printing failure can be resolved by use of the recommended paper which is stored in a proper environment, advise that the user use the recommended paper or instruct the user in storage methods for recording paper.

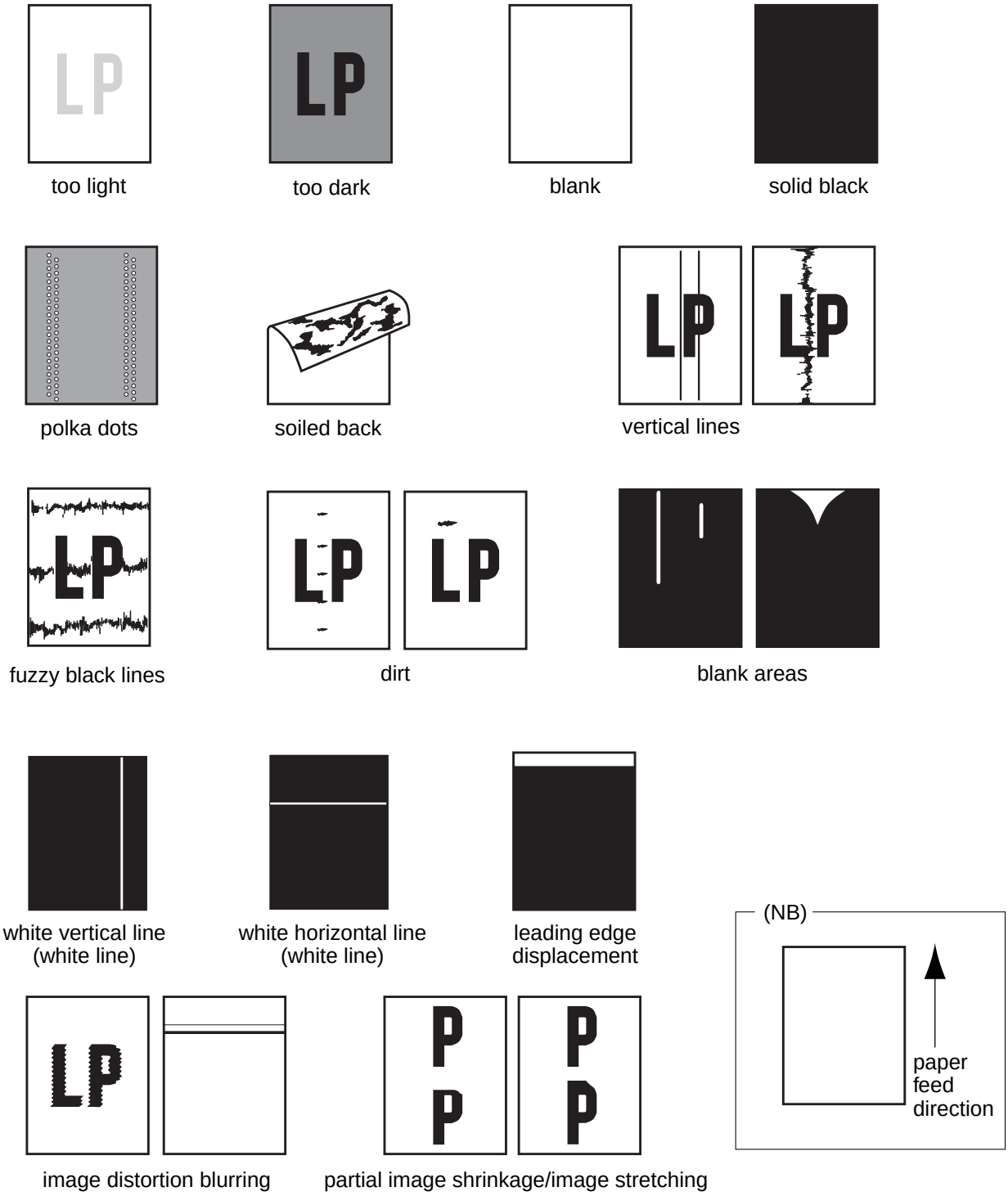


**Figure 13-201**

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## 1 Too Light

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Copy paper | 1 | When new (unopened) copy paper is used, does the density become darker? | YES | 1. The paper may be damp. Advise the user on paper storage methods.<br>2. If paper other than the recommended paper is being used, explain to the user that this may cause an inferior image. |
| | 2 | Make a test print following the directions on page 13-120. Is the output image too light? | NO | Check from Step 10. |
| | 3 | Interrupt and stop the machine while the image is being printed onto photosensitive drum. Is the toner being developed on the drum surface? | YES | Check from Step 8. |
| Cartridge | 4 | Remove the cartridge. Does the problem improve after the cartridge has been lightly shaken 5 or 6 times? | YES | End |
| Poor connector connection | 5 | Check the connection between connector J304 on the DC controller PCB and the laser scanner unit. Is it normal? | NO | Connect firmly. |
| Cartridge (primary charging roller) | 6 | Is the trouble resolved when the cartridge is replaced? | YES | End |
| Laser scanner unit | 7 | Is the trouble resolved when the laser scanner unit is replaced? | YES | End |
| DC controller PCB | | | NO | Replace the DC controller PCB |
| Transfer guide | 8 | When the transfer guide and other metal parts are measured by a tester, is the electrical resistance 0 ohms? | NO | Check that no screws or other metal parts have fallen near the transfer guide. |
| Transfer charging roller contact | 9 | Check the transfer charging roller and the high voltage contact point. Are they dirty? | YES | Clean the contacts. |
| Transfer charging roller | | | NO | Replace the transfer charging roller. |
| Dirty scanner assembly | 10 | Does the image improve when the mirror and lens dust proof glass are cleaned? | YES | End |


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| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Shading correction | 11 | Is the trouble resolved when automatic shading correction is performed? (see page 13-9) | YES | End |
| Poor connector connection (between the CCD unit and the image processor PCB) | 12 | Is the flat cable which connects J208 on the image processor PCB and the CCD unit properly connected? | NO | Connect the cable firmly. |
| | | Is the trouble resolved when the CCD unit is replaced? | | |
| CCD unit | 13 | | YES | End |
| Image processor PCB | | | NO | Replace the image processor PCB. |

## 2 Too Dark

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Dirty scanner assembly | 1 | Is the trouble resolved when the scanning lamp, reflecting plate, mirror and lens are cleaned? | YES | End |
| Automatic shading correction | 2 | Is the trouble resolved when automatic shading correction is performed? (see page 13-9) | YES | End |
| Cartridge | 3 | Is the trouble resolved when the cartridge is replaced? | YES | End |
| High-voltage contact point pin on the DC controller PCB | 4 | Are problems occurring due to deformity of the high-voltage contact point pin (JH402) on the DC controller PCB? | YES | Repair it. When this is not possible, replace the DC controller PCB. |
| Developing bias | 5 | Is the trouble resolved when the DC controller PCB is replaced? | YES | End |
| Image processor PCB | | | NO | Replace the image processor PCB. |

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## 3 Blank

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| | 1 | Make a test print following the directions on page 13-120. Is the output image blank? | NO | Check from Item 9. |
| Cartridge | 2 | Is the trouble resolved when the cartridge is replaced? | YES | End |
| High-voltage contact point | 3 | Is there dirt on the contact point that supplies high-voltage to the cartridge? (Remove the cartridge and check.) | YES | Clean the contact point. |
| Transfer charging roller | 4 | Is the transfer charging roller properly installed? | NO | Reinstall the transfer charging roller. |
| Poor connector contact (between the laser scanner unit and the DC controller PCB) | 5 | Check the contact between connector J304 on the DC controller PCB and the laser scanner unit. Is it properly connected? | NO | Reconnect the connector. |
| Laser scanner unit | 6 | Is the trouble resolved when the laser scanner unit is replaced? | YES | End |
| High-voltage contact point pin on the DC controller PCB | 7 | Are troubles occurring due to deformity of the high-voltage contact point pins (JH401, JH402, JH403) on the DC controller PCB? | YES | Repair it. When this is not possible, replace the DC controller PCB. |
| DC controller PCB | 8 | Is the trouble resolved when the DC controller PCB is replaced? | YES | End |
| Poor connector contact (between the CCD unit and image processor PCB) | 9 | Check the connection of the flat cable between connector J208 on the image processor PCB and the CCD unit. Is it properly connected? | NO | Reconnect the cable. |
| CCD unit | 10 | Is the trouble resolved when the CCD unit is replaced? | YES | End |
| Image processor PCB | | | NO | Replace the image processor PCB. |


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## 4 Solid black

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Scanning lamp | 1 | Is the scanning lamp lit while copying? | NO | See the “Scanning lamp does not light” section. |
| Cartridge (primary charging roller bias fault) | 2 | Is there dirt on the contact point that supplies high-voltage to the cartridge? | YES | Clean the contact point. |
| Cartridge | 3 | Is the trouble resolved when the cartridge is replaced? | YES | End |
| High-voltage contact point of the DC controller PCB | 4 | Are problems occurring due to deformity of the high-voltage contact point pin JH401 on the DC controller PCB? | YES | Repair it. When this is not possible, replace the DC controller PCB. |
| CCD unit | 5 | Is the trouble resolved when the CCD unit is replaced? | YES | End |
| Image processor PCB | | | NO | Replace the image processor PCB. |

## 5 Polka dots

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Cartridge (photosensitive drum) | 1 | Is the surface of the photosensitive drum scratched? | YES | Replace the cartridge. |
| Transfer charging roller | 2 | Is the transfer charging roller dirty? | YES | Clean the roller. If it is scratched, replace it. |
| Static charge eliminator | 3 | Is the static charge eliminator dirty? | YES | Clean the static charge eliminator. |
| Re-charging eliminator | 4 | Is the re-charging eliminator dirty? | YES | Clean the re-charging eliminator. |
| DC controller PCB | 5 | Are problems occurring due to deformity of the high-voltage contact point pin JH401 on the DC controller PCB? | YES | Repair it. |
| | | | NO | Replace the DC controller PCB. |

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## 6 Soiled back

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Dirt in paper feed path | 1 | Check the paper feed path. Is it dirty? | YES | Clean the paper feed path. |
| Transfer guide | 2 | Is there toner on the surface of the transfer guide? | YES | Clean the transfer guide. |
| Static charge eliminator | 3 | Is there toner on the static charge eliminator? | YES | Clean the static charge eliminator. |
| Re-charging eliminator | 4 | Is there toner on the re-charging eliminator | YES | Clean the re-charging eliminator. |
| Transfer charging roller | 5 | Is the dirt's cycle at an approximately 54mm pitch? | YES | Clean the transfer charging roller. |
| Registration roller | 6 | Is the dirt's cycle at an approximately 52mm pitch? | YES | Clean the registration roller. |
| Fixing assembly inlet guide | 7 | Is the trouble resolved when the fixing assembly inlet guide is cleaned? | YES | End |
| | | | NO | Replace the fixing assembly. |

## 7 Black Lines (thin vertical lines)

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Scanner assembly | 1 | Make a test print following the directions on page 13-120. Is the output image normal? | YES | Clean the copyboard glass, mirrors 1 to 4 and the lens. |
| CCD unit | 2 | Is the trouble resolved when the CCD unit is replaced? | YES | End |
| Cartridge (photosensitive drum) | 3 | Remove the cartridge and check the surface of the photosensitive drum. Are there scratches in the drum's direction of rotation? | YES | Replace the cartridge. |
| Primary charging roller | 4 | Is the trouble resolved when the cartridge is replaced? | YES | End |
| Dirty fixing assembly inlet guide | 5 | Is the trouble resolved when the fixing assembly inlet guide is cleaned? | YES | End |
| Fixing assembly | | | NO | Replace the fixing assembly. |


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## 8 Vertical Fogging

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Exposure system | 1 | Make a test print following the directions on page 13-120. Is the output image normal? | YES | Clean the copyboard glass, mirrors 1 to 4 and the lens. |
| Cartridge | 2 | Is the trouble resolved when the cartridge is replaced? | YES | End |
| External light | | | NO | Check that no external light is reaching the photosensitive drum. |

## 9 Fuzzy Horizontal Black Lines

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Connection fault due to poor contact of the flat cable | 1 | Is the flat cable connecting the inverter PCB and the image processor PCB almost broken? | YES | Replace the cable. |
| Poor drum sensitivity of the developer cylinder drum | 2 | Is the trouble resolved when the cartridge is replaced? | YES | End |
| Fixing assembly | | | NO | Replace the fixing assembly. |

## 10 Dirt

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Copyboard glass | 1 | Make several copies consecutively. Does the dirt always occur in the same place? | YES | Clean the copyboard glass. |
| Toner spillage | 2 | Does the dirt occur at random? | YES | Check if toner is spilling from the cartridge. |
| Fixing assembly | 3 | Does the dirt's cycle occur at an approximately 75mm pitch? | YES | Replace the fixing assembly. |
| Cartridge | | | NO | Replace the cartridge. |

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| 11 | White Strips (vertical) |
|---|---|
| 12 | Thin White Lines (vertical) |

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Exposure system | 1 | Make a test print following the directions on page 13-120. Is the output image normal? | YES | Clean the white reference plate, on the back of the copyboard glass, and mirrors 1-4. |
| Transfer charging roller | 2 | Is there dirt on the transfer charging roller? | YES | Clean the roller. If cleaning does not solve the problem, replace the roller. |
| Separation static charge eliminator | 3 | Is there dirt on the separation static charge eliminator? | YES | Clean the separation static charge eliminator. |
| Cartridge | 4 | Is the trouble resolved when the cartridge is replaced? | YES | End |
| Fixing Assembly | | | NO | Replace the fixing assembly. |

| 13 | Leading Edge Displacement |
|---|---|

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Document | 1 | Is the document set properly? | NO | Reset the document. |
| Paper curl | 2 | Is the paper very curled? | YES | Replace the paper. |
| Paper overload | 3 | Is the amount of paper set in the cassette over the limit? | YES | Explain to the user that each cassette can hold a maximum of 250 sheets of paper. |
| Pick-up roller<br>Feed roller<br>Separation roller | 4 | Are the rollers of the pick-up level on which the displacement occurs normal? | NO | Check each roller. If any are worn, replace them. |
| Registration roller | 5 | Is the registration roller normal? | NO | If the registration roller is dirty, clean it. If it is worn, replace it. |
| Faulty adjustment of leading edge margin | 6 | Is the trouble resolved when the leading margin adjustment procedures described on page 13-3 are performed? | YES | End |
| DC controller PCB | | | NO | Replace the DC controller PCB. |


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## 14 Blurring

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Scanner wire | 1 | Is trouble occurring due to twisting or fraying of the wire that is wound onto the wire pulley while the scanner is moving? | YES | 1. Reattach the wire.<br>2. Replace the wire. |
| Scanner rail | 2 | Gently move mirror1 mount manually. Does it move smoothly? | NO | Clean the scanner rail with alcohol. Then apply a small amount of lubricant. |
| Cartridge | 3 | Is the trouble resolved when the cartridge is replaced? | YES | End |
| Printer unit main drive assembly | 4 | Is slipping or fracturing occurring due to gear wear of the printer unit main drive assembly? | YES | Replace the gear. |
| Check connector connection (between the laser scanner unit and the DC controller PCB) | 5 | Check the connection of connector J304 on the DC controller PCB and the laser scanner unit. Is the connector firmly connected? | NO | Reconnect the connector. |
| Laser scanner unit | 6 | Is the trouble resolved when the laser scanner unit is replaced? | YES | End |
| DC controller PCB | | | NO | Replace the DC controller PCB. |

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## C. Operation malfunction countermeasures

### 1 No power

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Power plug | 1 | Is the power plug connected? | NO | Connect the power plug. |
| No power supplied from outlet | 2 | Is the prescribed voltage being supplied to the outlet? | NO | Explain to the customer that the trouble is not caused by the machine. |
| Fuse | 3 | Are fuses F3, F4 or F5 on the DC power supply PCB blown? | YES | Investigate why the fuse blew. |
| DC power supply PCB | | | | Replace the DC power supply PCB. |

### 2 No LCD display on the control panel

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Monitor/Display contrast | 1 | Is the control panel display contrast adjustment volume properly set? | NO | Reset the contrast volume. |
| Poor connector contact | 2 | Are connectors J41 and J42 on the control panel PCB and connector J203 on the image processor PCB properly connected? | NO | Reconnect the connectors. |
| Control panel | 3 | Is the trouble resolved when the control panel is replaced? | YES | End |
| Image processor PCB | | | NO | Replace the image processor PCB. |


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## 3 Paper does not pick up (Main unit cassette)

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| | 1 | Is the “No paper message” lit? | YES | Refer to the “No paper message does not go out” section. |
| | 2 | Is the pick-up roller rotating? | NO | Check from Item 6. |
| Cassette attachment | 3 | Is the cassette set properly? | NO | Reset the cassette. |
| Paper set condition | 4 | Has too much paper been set in the cassette? Has the paper been set properly? | NO | Reset the paper. |
| Pick-up roller | 5 | Is the trouble caused by wear, abrasion or cracking on the pick-up roller surface? | YES | Replace the pick-up roller. |
| Pick-up drive assembly gears | 6 | Is the trouble caused by cracking or damage to the gears in the pick-up drive assembly? | YES | Replace damaged gears. |
| Faulty connector connection | 7 | Is connector J306 on the DC controller PCB properly connected? | NO | Reconnect the connector. |
| Pick-up solenoid | 8 | Is the trouble resolved when the pick-up solenoid is replaced? | YES | End |
| DC controller PCB | | | NO | Replace the DC controller PCB. |

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## 4 Paper does not pick-up (multifeeder)

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| | 1 | Is the “Supply REC. paper” indicator lit? | YES | Refer to the “Supply REC. paper indicator does not go out” section. |
| | 2 | Is the multifeeder pick-up roller rotating? | NO | Check from Item 6. |
| Paper set condition | 3 | Has too much paper been set in the multifeeder? Has the paper been set properly? | NO | Reset the paper. |
| Lifting plate raising mechanism | 4 | Does the lifting plate rise with the pick-up timing? | NO | Check if the spring that lifts the lifting plate is properly set. |
| Multifeeder pick-up roller | 5 | Make a copy with the multifeeder pick-up. Is the pick-up roller rotating? | YES | Check the multifeeder pick-up roller. Clean the surface of the roller. If that does not resolve the problem, replace the pick-up roller. |
| Connector connection | 6 | Check the wiring between connector J307 and the multifeeder pick-up solenoid (SL302). | NO | If the connectors are making poor contact, reconnect them. |
| Multifeeder pick-up drive assembly | 7 | Are the multifeeder pick-up drive assembly gears damaged? | YES | Replace damaged gears. |
| DC controller PCB | | | NO | Replace the DC controller PCB. |


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## 5 Paper does not pick-up (cassette feeder)

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| | 1 | Is the “Supply REC. paper” message lit? | YES | Refer to the “Supply REC. paper message does not go out” section. |
| | 2 | Is the pick-up roller rotating? | NO | Check from Item 6. |
| Cassette attachment | 3 | Is the cassette set properly? | NO | Reset the cassette. |
| Paper set condition | 4 | Has too much paper been set in the cassette? Has the paper been set properly? | NO | Reset the paper. |
| Pick-up roller | 5 | Is the cassette feeder pick-up roller rotating? | YES | Clean the roller surface. If the trouble is not resolved, replace the pick-up roller. |
| Fuse on the feeder controller PCB | 6 | Is the fuse on the feeder control PCB (FU601) blown? | YES | Find the reason why the fuse blew. |
| Connector connection | 7 | Are connectors J652 and J653 on the feeder controller PCB properly connected? | NO | Reconnect the connectors. |
| Pick-up solenoid (SL651) | 8 | Place the tester’s lead pin between connectors J653-2 (+) and J653-1 (-) on the feeder control PCB. Set the appropriate pick-up level. Press the start key. Does the voltage go from 0V to about 24V? | YES | Replace the pick-up solenoid of the corresponding pick-up level. |
| Feeder motor (M651) | 9 | Is the trouble resolved when the feeder motor (M651) is replaced? | YES | End |
| Feeder controller PCB | | | NO | Replace the feeder control PCB. |

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## 6 Registration roller does not rotate

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Connector connection | 1 | Check the wiring from connector J307 to the registration clutch (CL302) | NO | If the trouble is a faulty connection, reconnect the connector. |
| Registration clutch (CL302) | 2 | Is the trouble resolved when the registration clutch (CL302) is replaced? | YES | End |
| DC controller PCB | 3 | | NO | Replace the DC controller PCB. |

## 7 Scanner does not move forward

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Scanner drive wire | 1 | Is the scanner drive wire properly attached? | NO | Attach the wire properly. |
| Foreign object in the scanner drive path | 2 | Is there any dirt on the scanner rail? Does it operate smoothly? | NO | Check that there is no dirt or debris on the scanner rail surface and that nothing is touching the scanner. |
| Poor connector contact | 3 | Check the wiring from connector J214 on the image processor PCB to the scanner motor. Is it normal? | NO | If the trouble is caused by a faulty connection, reconnect the connector. |
| Scanner motor | 4 | Is the trouble resolved when the scanner motor is replaced? | YES | End |
| Image processor PCB | | | NO | Replace the image processor PCB. |

## 8 Scanning lamp does not illuminate

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Scanning lamp | 1 | Is the trouble resolved when the scanning lamp is replaced? | YES | End |
| Inverter PCB connector | 2 | Are the connections of CN1 and CN2 on the image processor PCB secure? | NO | Connect firmly. |
| Image processor PCB connector | 3 | Is connector J207 on the image processor PCB properly connected? | NO | Connect firmly. |
| Inverter PCB | 4 | Is the trouble resolved when the inverter PCB is replaced? | YES | End |
| Image processor PCB | | | NO | Replace the image processor PCB. |


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## 9 Speaker does not operate

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Volume setting | 1 | Is the speaker volume in the user mode set appropriately? | NO | Reset the volume. |
| Faulty connector connection | 2 | Is connector J211 on the image processor PCB properly connected? | NO | Connect it properly. |
| Speaker | 3 | Is the trouble resolved when the speaker is replaced? | YES | End |
| Image processor PCB | | | NO | Replace the image processor PCB. |

## 10 The “Set cartridge” indicator does not go out

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Cartridge | 1 | Is the trouble resolved when the cartridge is replaced? | YES | End |
| High-voltage contact point pin (Main unit and cartridge) | 2 | Is there any dirt, such as toner, on the Main unit or cartridge high-voltage contact point pins? | YES | Clean the Main unit or cartridge high-voltage contact point pin. |
| High-voltage contact point pin (DC controller PCB) | 3 | Is the DC controller PCB high-voltage contact point pin deformed? | YES | Repair it. |
| DC controller PCB | | | NO | Replace the DC controller PCB. |

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## 11 The "Supply REC. paper" indicator does not go out (Main unit and cassette feeder)

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Cassette attachment | 1 | Is the cassette properly mounted? | NO | Reset the cassette. |
| Paper size lever | 2 | Is the cassette's paper size lever out of alignment or damaged? | YES | Repair the paper size lever. |
| Cassette lifting plate raising mechanism | 3 | Does the lifting plate rise when the cassette is set into the Main unit? | NO | Turn the cassette over and check if the lifting plate retaining roller is damaged. |
| Paper supply sensor flag | 4 | Is the paper supply sensor out of alignment or damaged? | YES | Replace the flag. |
| Connector connection | 5 | Check the following connector connections<br>• When the problem cassette is the Main unit cassette, check connectors J302, J306 on the DC controller PCB.<br>• When the problem cassette is a cassette feeder cassette, check connectors J654, J655 on the feeder controller PCB<br>Are the connectors properly connected? | NO | Reconnect the connectors. |
| Paper supply sensor | 6 | Is the trouble resolved when the paper supply sensor is replaced? | YES | End |
| Cassette size sensing switch | 7 | Is the trouble resolved when the cassette size sensing switch is replaced? | YES | End |
| DC controller PCB (feed controller PCB) | | | NO | If the problem cassette is the Main unit cassette, replace the DC controller PCB. If the problem cassette is a cassette feeder cassette, replace the corresponding feeder controller PCB. |


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## 12 The "Add paper" indicator does not go out (multifeeder)

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Multifeeder paper supply sensor flag | 1 | Is the multifeeder paper supply sensor flag operating properly? | NO | Repair the multifeeder paper supply sensor flag. |
| Faulty connector contact | 2 | Is the cable between connector J309 on the DC controller PCB and connector J501 on the sensor PCB properly connected? | NO | Reconnect the connectors properly. |
| Sensor PCB | 3 | Is the trouble resolved when the sensor PCB is replaced? | YES | End |
| DC controller PCB | | | NO | Replace the DC controller PCB. |

## 13 JAM indicator does not go out

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Sensor flag | 1 | Are the jam detection sensors below out of alignment or damaged?<br>• Pick-up sensor (PS303)<br>• Registration sensor (PS302)<br>• Leading edge sensor (PS301)<br>• Delivery sensor (PS304) | YES | Repair the sensor. If it is damaged, replace it. |
| Sensor check | 2 | Check each sensor according to the directions on page 13-127. Are they normal? | NO | Replace the faulty sensor. |
| DC controller PCB (feeder controller PCB) | | | YES | Replace the DC controller PCB or the feeder controller PCB. |

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# III. FAULTY FEEDING COUNTERMEASURES

## A. Overview

The primary locations where paper jams occur in this machine are as shown below.

[1] Pick-up assembly
[2] Feeder assembly
[3] Fixing/Delivery area

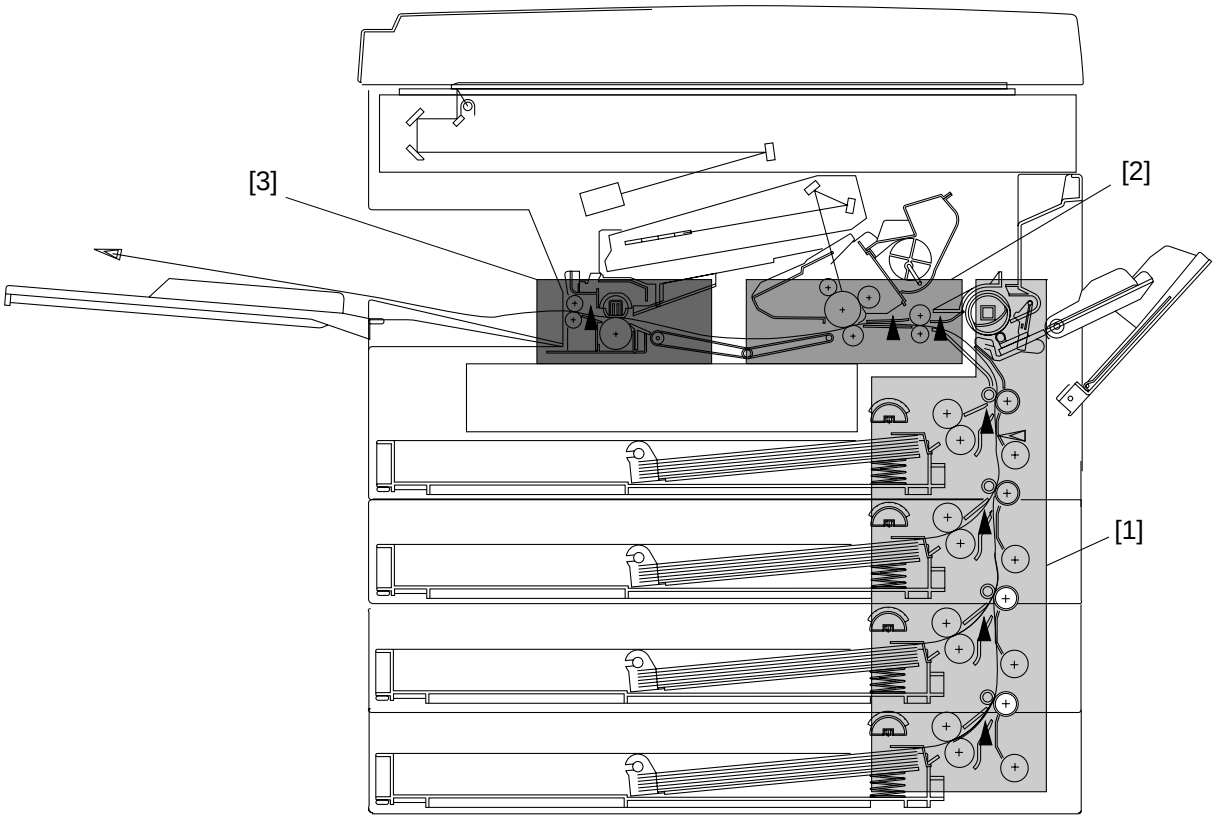


**Figure 13-301**

**Reference:**

The figure above depicts a machine with a 3-level cassette feeder. The feeder construction is the same on all levels. Accordingly, when only one cassette feeder level is attached, the structure will be like the figure above with the bottom two levels removed.


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## B. Copy paper jam

| 1 | Pick-up assembly |
|---|---|

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| | 1 | Does the trouble occur at cassette pick-up? | NO | Check from Item 13. |
| | 2 | Is the pick-up roller of the selected pick-up level rotating? | NO | Check from Item 11. |
| Cassette | 3 | Is the cassette set properly? | NO | Reset the cassette properly. |
| | 4 | Is the trouble resolved when a different cassette is used? | NO | Check from Item 7. |
| | 5 | Is the paper size lever set to the proper position? | NO | Reset the lever. |
| | 6 | Does the cassette's lifting plate rise when the cassette is set into the Main unit? | NO | Check if the lifting plate retaining roller is damaged. |
| Paper | 7 | Has too much paper (limit 250 sheets) been set in the cassette? | YES | Advise the user to use the proper amount of paper. |
| | 8 | Is the paper curled, wavy or otherwise altered? | YES | Replace the paper. Advise the user of storage methods. |
| | 9 | Is the trouble resolved when paper recommended by Canon is used? | YES | Advise the user to use the recommended paper. |
| Roller wear | 10 | Check the surfaces of the pick-up, feeder and separation rollers of the selected pick-up level. Are they normal? | NO | Clean the roller. If the trouble is not resolved, replace the roller. |
| Connector connection | 11 | Check the status connection status of the following.<br>Main unit pick-up cassette:<br>Cable between connector J306 on the DC controller PCB and the pick-up solenoid (SL301)<br>Cassette feeder:<br>Cable between connector J653 on the feeder controller PCB and the pick-up solenoid (SL651) | NO | Reconnect properly. |
| Pick-up solenoid (SL301) | | | YES | Replace the pick-up solenoid. |
| Connector connection | 12 | Check the cable connection between connector J307 on the DC controller PCB and the pick-up/feeding clutch (CL301). Is it normal? | NO | Repair the cable connection. |
| Pick-up/feeding clutch (CL301) | | | YES | Replace the pick-up/feeding clutch (CL301). |

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| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| | 13 | Is the multifeeder pick-up roller rotating? | NO | Check from Item 16. |
| Multifeeder pick-up roller | 14 | Check the surface of the multifeeder pick-up roller. Is it normal? | NO | Clean the roller. If it is worn or misshapen, replace it. |
| Lifting plate retaining cam | 15 | Does the multifeeder lifting plate rise as the multifeeder pick-up roller rotates? | NO | Check that the lifting plate retaining cam isn't out of alignment. |
| Multifeeder pick-up drive assembly gear | 16 | Are the multifeeder pick-up drive assembly gears damaged? | YES | Replace damaged gears. |
| Connector connection | 17 | Check the wiring from connector J307 on the DC controller PCB to the multifeeder pick-up solenoid (SL302). Is it normal? | NO | Reconnect the connectors. |
| Multifeeder pick-up solenoid (SL302) | 18 | Is the trouble resolved when the multifeeder pick-up solenoid (SL302) is replaced? | YES | End |
| DC controller PCB | | | NO | Replace the DC controller PCB. |


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## 2 Feeder assembly

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| | 1 | Is the registration roller rotating? | NO | Check from Item 7. |
| Copy paper | 2 | Is the trouble resolved when paper recommended by Canon is used? | YES | Explain to the user to use the recommended paper. |
| Registration roller | 3 | Check the surface of the registration roller. Is it normal? | NO | Clean the dirt. If the roller is worn or misshapen, replace it. |
| Registration roller engagement mechanism | 4 | Is the nip width between the registration roller and the registration engagement roller normal? | NO | Check if the engagement spring is stretched out. |
| Feeder belt drive mechanism | 5 | Is the feeder belt rotating? | NO | Check if the feeder belt drive gear is damaged. |
| Feeder belt | 6 | Check that no dirt is stuck to the feeder belt. Is it normal? | NO | Clean the belt surface. If it is stretched out or cracked, replace the feeder unit. |
| Connector connection | 7 | Check the wiring from connector J307 on the DC controller PCB to the registration clutch (CL302). Is it normal? | NO | Reconnect the connectors. |
| Registration clutch (CL301) | 8 | Is the trouble resolved when the registration clutch (CL301) is replaced? | YES | End |
| DC controller PCB | | | NO | Replace the DC controller PCB. |

## 3 Fixing/Delivery Area

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Fixing assembly inlet guide | 1 | Check that there are no toner stains on the fixing assembly inlet guide. Is it normal? | YES | Clean the inlet guide. |
| Connector connection | 2 | Check the connection of connector J308 on the DC controller PCB. Is it normal? | NO | Reconnect the connector properly. |
| Fixing assembly | 3 | Is the trouble resolved when the fixing assembly is replaced? | YES | End |
| DC controller PCB | | | NO | Replace the DC controller PCB. |

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# C. Faulty feeding

## 1 Double feeding

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Paper amount | 1 | Is the cassette overloaded with paper (over 250 sheets)? | YES | Explain the cassette paper capacity to the user. |
| Paper condition | 2 | Is the trouble resolved when new paper is used? | YES | The paper may be damp. Instruct the user on storage methods. |
| | 3 | Does double feeding occur at cassette pick-up? | NO | Check from Item 6. |
| Cassette claw | 4 | Is the cassette separation claw misshapen? | YES | Repair the claw. If the problem is not resolved, replace the cassette. |
| Separation roller | 5 | Check the surface of the separation roller. Is it normal? | NO | Clean the roller. If the trouble is not resolved, replace the separation roller. |
| Torque limiter | | | YES | Replace the torque limiter. |
| Multifeeder separation pad | 6 | Is the surface of the multifeeder separation pad or the separation subpad worn? | YES | Replace the pad. |
| Separation pad pressure spring | | | NO | Check if the separation pad pressure spring is misshapen. |

## 2. Creases

| Cause | Steps | Checks | Yes/No | Action |
|---|---|---|---|---|
| Pick-up assembly | 1 | Turn off the power source as the paper is passing through the feeder assembly. Are there any creases or skewing on the copy paper at this time? | YES | Check the feeding assembly rollers and registration rollers. |
| Paper condition | 2 | Is the trouble resolved when new paper is used? | YES | The paper may be damp. Instruct the user on storage methods. |
| | 3 | Is the trouble resolved when paper recommended by Canon is used? | YES | Request that the user use the recommended paper. |
| Fixing unit inlet guide | 4 | Is there any toner or debris on the fixing unit inlet guide? | YES | Clean the inlet guide. |
| Fixing unit | | | NO | Replace the fixing unit. |


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# IV. ELECTRICAL PARTS POSITIONS/FUNCTIONS

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# A. Clutches, solenoids

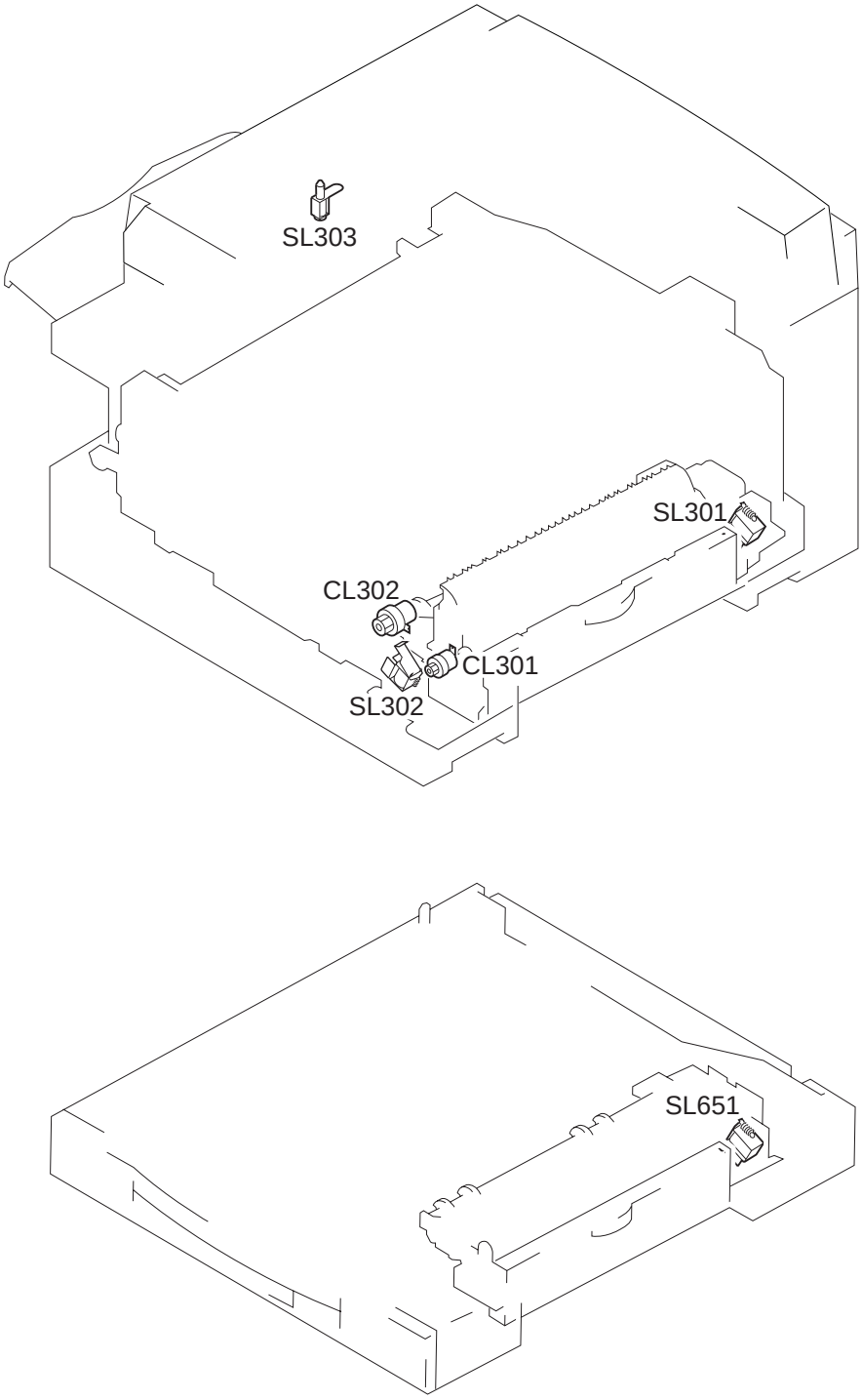


**Figure 13-401**


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Clutch, solenoid types

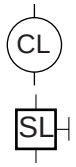
| Symbol | Name | Code | Function |
|---|---|---|---|
|   | Clutch | CL301 | Pick-up/feeder roller drive |
| | | CL302 | Registration roller drive |
| | Solenoid | SL301 | Main unit pick-up roller drive |
| | | SL302 | Multifeeder pick-up roller drive |
| | | SL303 | Completion stamp drive |
| | | SL651 | Cassette feeder pick-up roller drive |

**Table 13-401**

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## B. Motor, fan

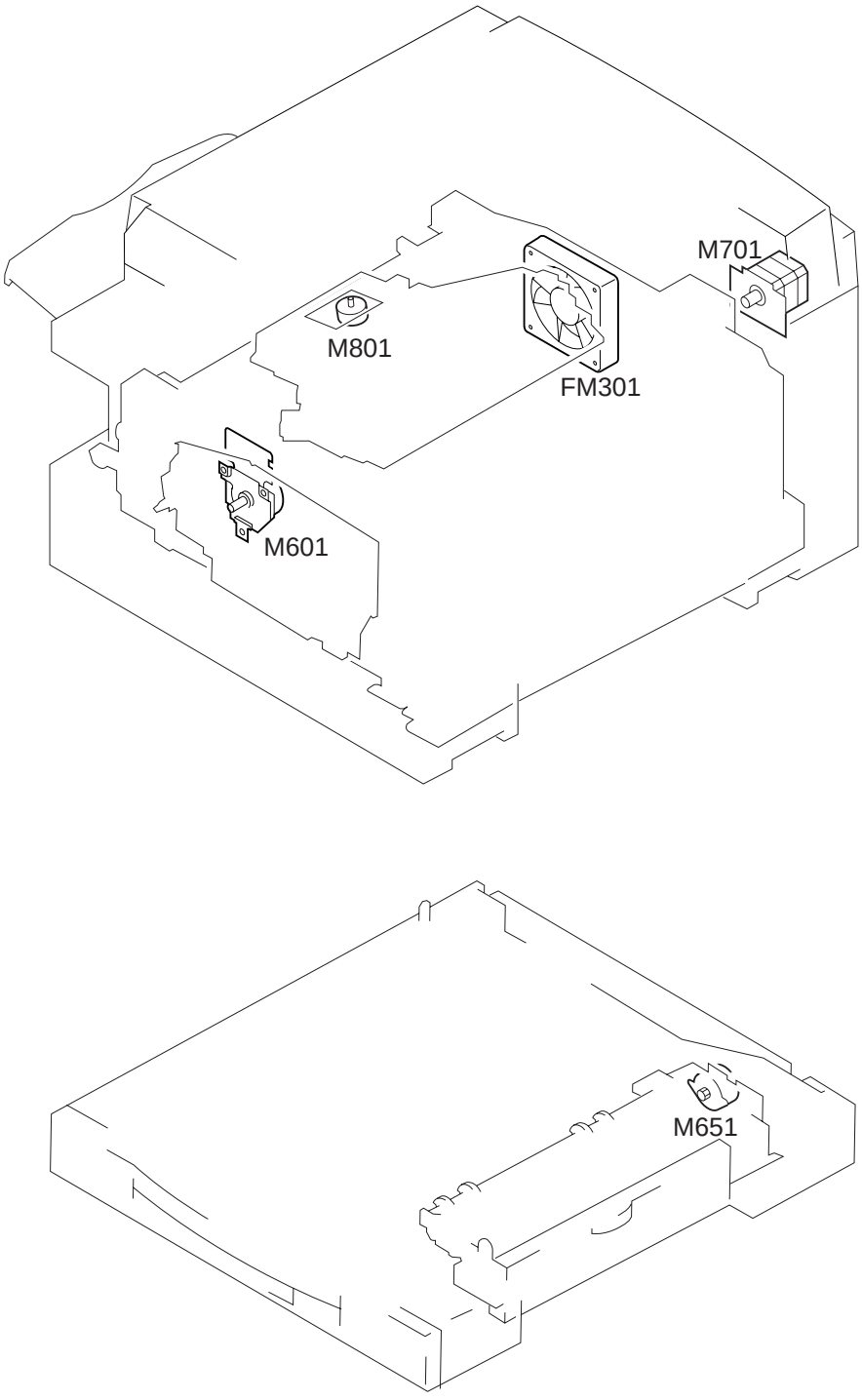


**Figure 13-402**


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Motors, fans

| Symbol | Name | Code | Function |
|---|---|---|---|
| M | Motor | M601 | Main motor |
| | | M701 | Scanner motor |
| | | M651 | Feeder motor (cassette feeder) |
| | | M801 | Laser scanner motor |
| | Fan | FM301 | Exhaust fan |

**Table 13-402**

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## C. Sensors

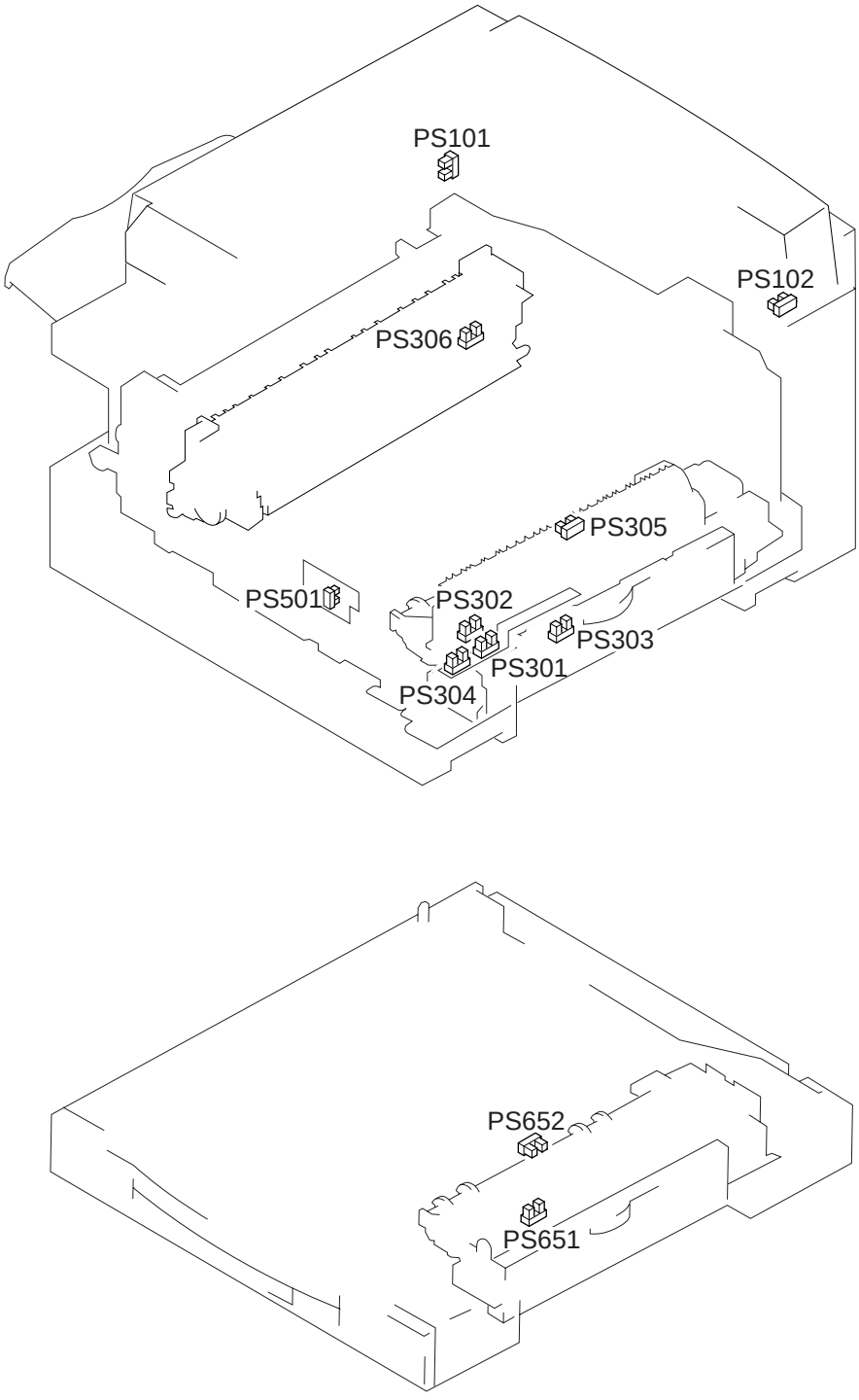


**Figure 13-403**


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Sensors

| Symbol | Name | Code | Function |
|---|---|---|---|
| | Photo-interuppter | PS101 | Scanner home position sensor |
| | | PS102 | Copyboard cover open/close sensor |
| | | PS301 | Paper leading edge sensor |
| | | PS302 | Registration paper sensor |
| | | PS303 | Pick-up sensor |
| | | PS304 | Paper width sensor |
| | | PS305 | Cassette paper supply sensor |
| | | PS306 | Delivery sensor |
| | | PS501 | Multifeeder paper supply sensor |
| | | PS651 | Cassette feeder pick-up sensor |
| | | PS652 | Cassette paper supply sensor (cassette feeder) |

**Table 13-403**

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## D. Switches, lamps, miscellaneous

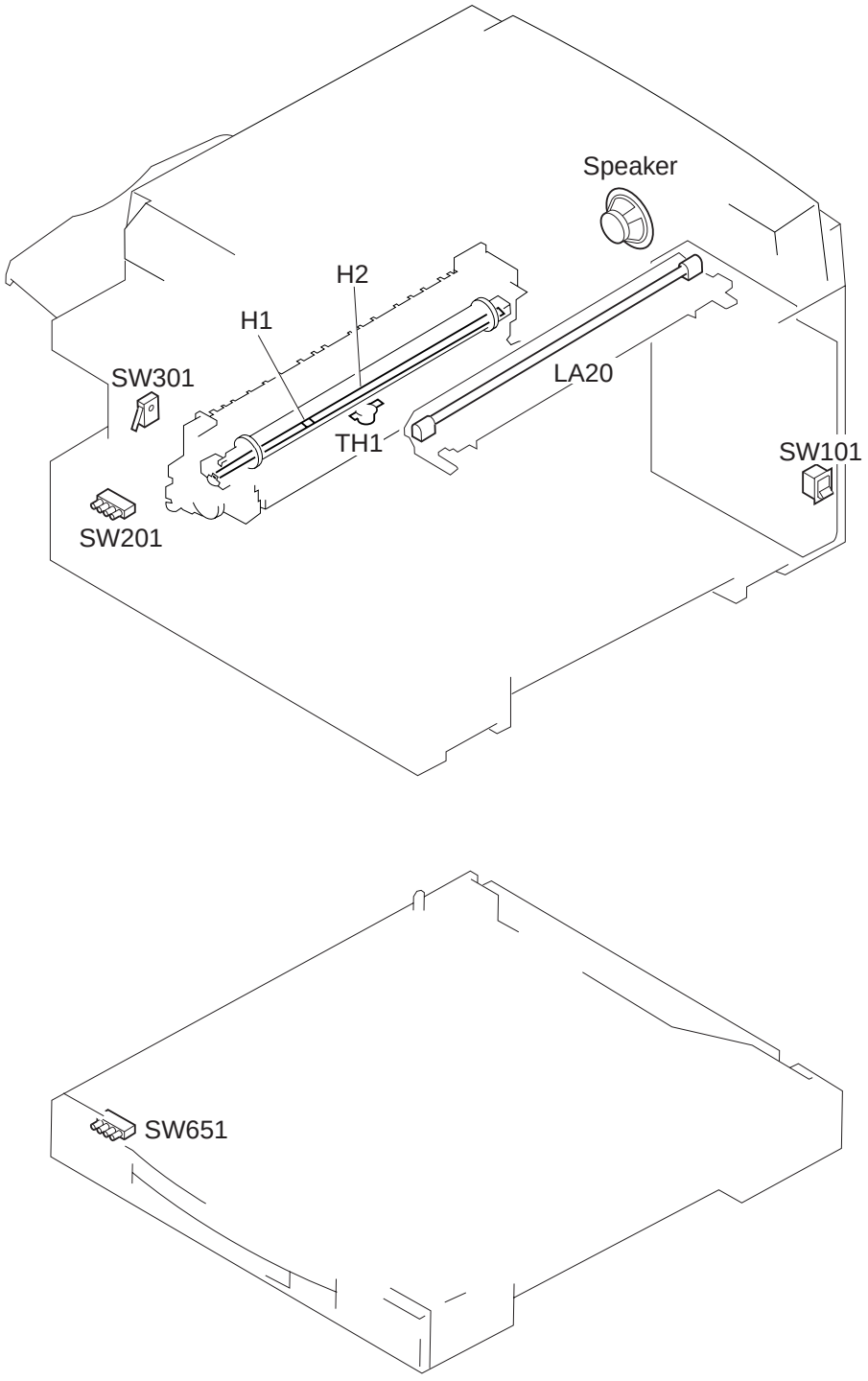


**Figure 13-404**


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Switches, lamps, miscellaneous

| Symbol | Name | Code | Function |
|---|---|---|---|
| | Switch | SW101 | Power supply switch |
| | | SW201 | Cassette size sensor switch (Main unit) |
| | | SW301 | Front cover open/close sensor switch |
| | | SW651 | Cassette size sensor switch (cassette feeder) |
| | Lamp | LA20 | Scanning lamp |
| | Heater | H1 | Heater 1 |
| | | H2 | Heater2 |
| | Thermistor | TH1 | Thermistor |
| | Speaker | | Speaker |

**Table 13-404**



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## E. PCBs

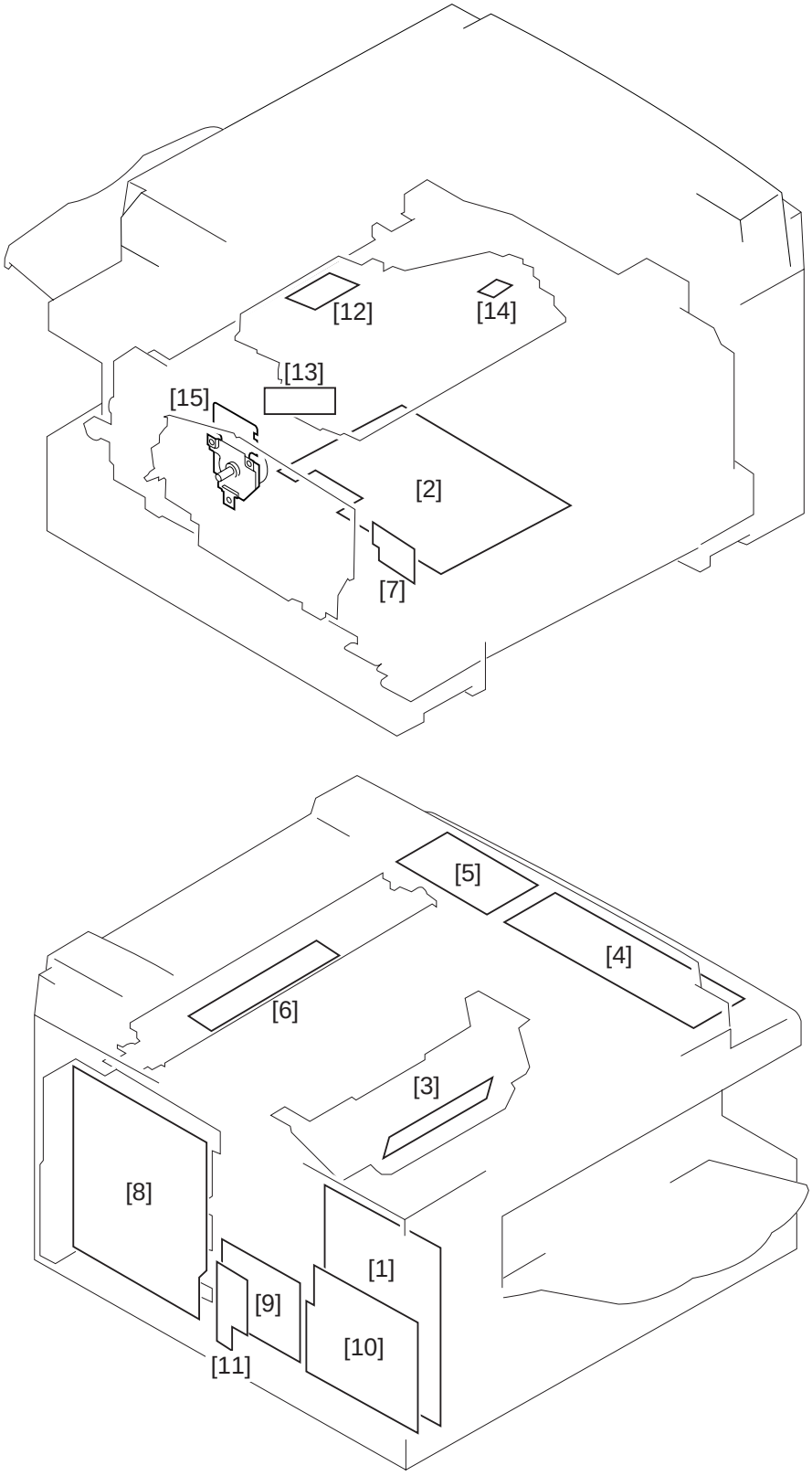


**Figure 13-405**


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PCBs

| Symbol | Name | Function |
|---|---|---|
| [1] | Image processor PCB | Image processing |
| [2] | DC controller PCB | DC load control |
| [3] | Analog processor PCB | CCD drive/analog image processing |
| [4] | Control panel PCB | Control panel control |
| [5] | Control panel sub-PCB | Control panel control |
| [6] | Inverter PCB | Scanning lamp illumination control |
| [7] | Sensor PCB | Test print switch/leading edge margin adjustment VR |
| [8] | DC power supply PCB | DC power source |
| [9] | NCU PCB* | Fax transmission control |
| [10] | Modem PCB* | Fax transmission signal modulation/demodulation |
| [11] | Modular PCB* | Telephone line connection |
| [12] | Laser scanner motor driver | Laser scanner motor drive |
| [13] | Laser driver PCB | Laser drive |
| [14] | BD PCB | Laser beam sensor |
| [15] | Main motor driver | Main motor drive |

* Mounted only in machines with fax function installed.

**Table 13-405**

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## F. Variable resistor (VR)/LED/check pin listed by PCB plate

Only the varistors, LEDs and check pins that need to be checked during field service are listed below.

**Note:**

1. Some LEDs leak a small amount of current even when normal, and therefore glow faintly even when they are off. Do not mistake this phenomenon for their being ON.
2. VRs which may be adjusted in the field: ⊘
   VRs which must not be adjusted in the field: ⊘

**Note:**

Check pins not listed below are only for factory use, and their adjustment and check requires special tools and measurement instruments. Their adjustments require a greater degree of accuracy and must not be touched during field service.


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## 1. Image processor PCB

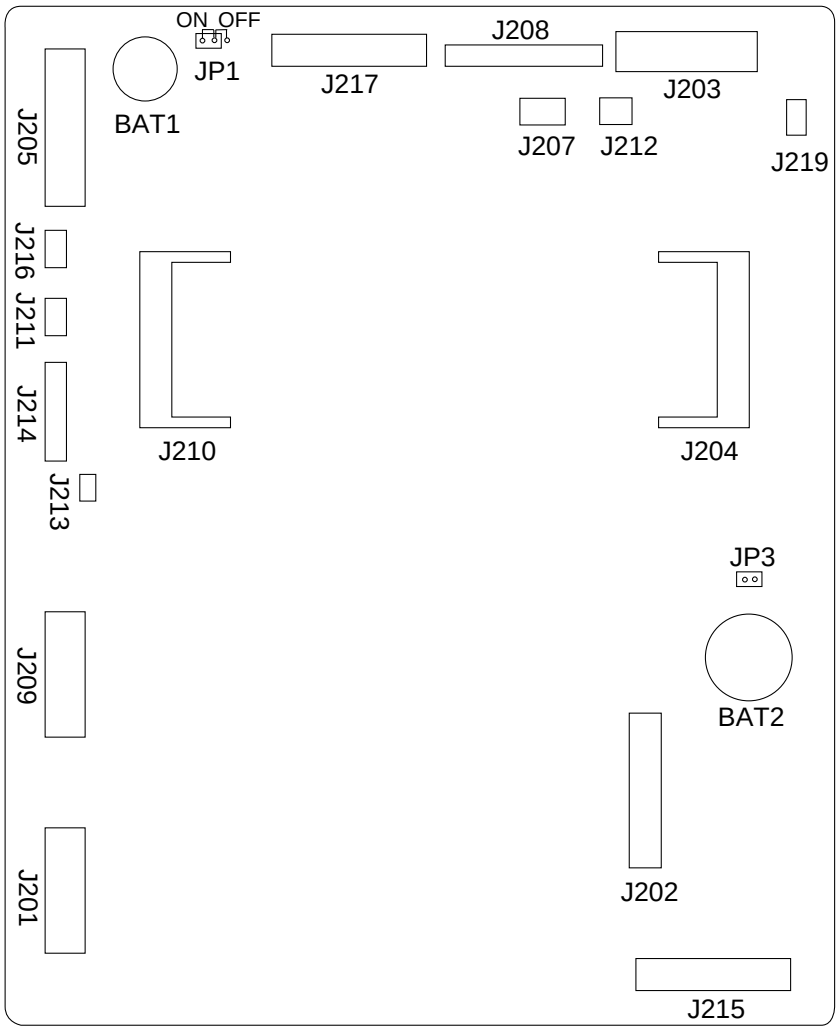


**Figure 13-406**

- JP1 : Image memory backup battery (BAT1) electrification jumper plug
- JP3 : Data control (user data, service mode data) memory backup battery (BAT2) electrification jumper plug
- BAT1 : Fax transmission image memory backup battery
- BAT2 : Control data (service mode data, user mode data) memory backup battery

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## 2. DC controller PCB/ Sensor PCB

### ■ DC controller PCB

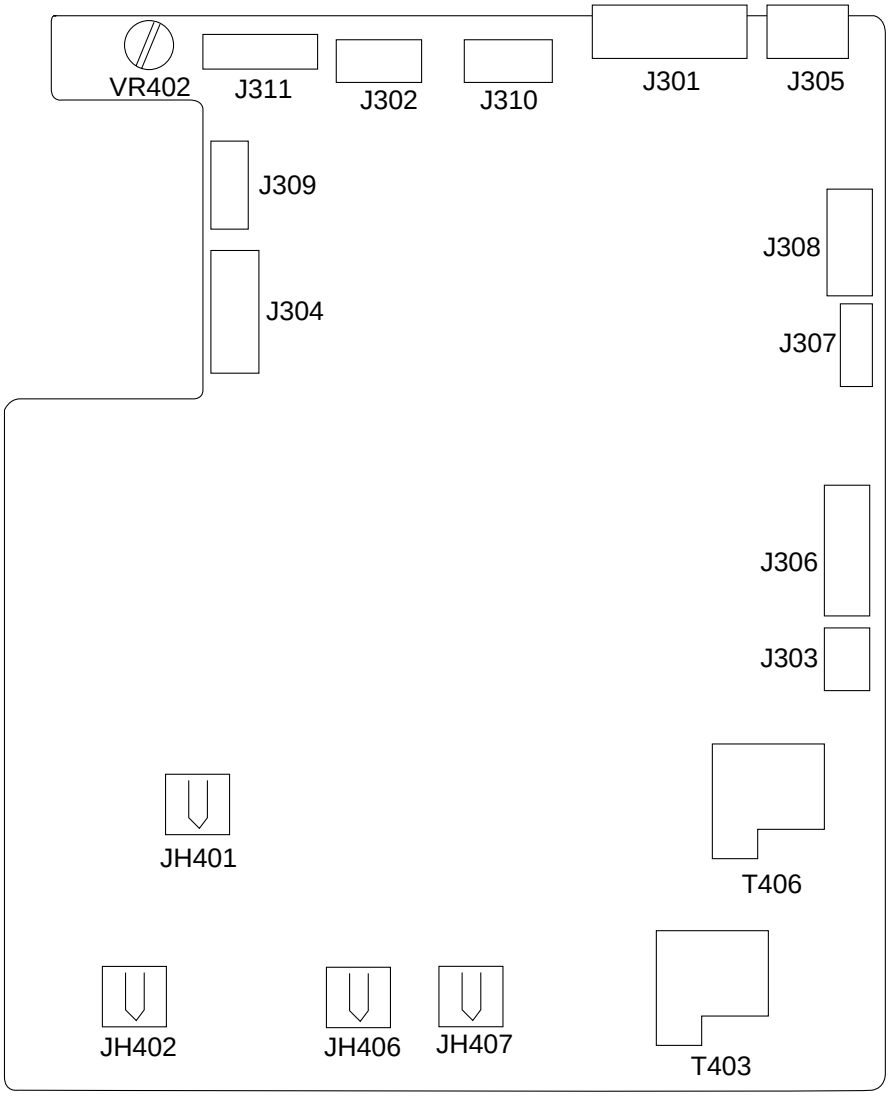


**Figure 13-407**

VR402: For factory adjustment

### ■ Sensor PCB

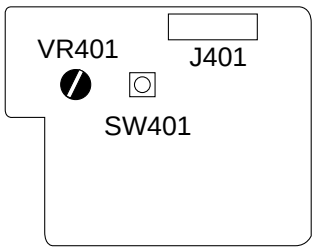


**Figure 13-408**

VR401 : VR for image leading edge margin adjustment
SW401 : Push switch for test print output


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## ■ DC power supply PCB

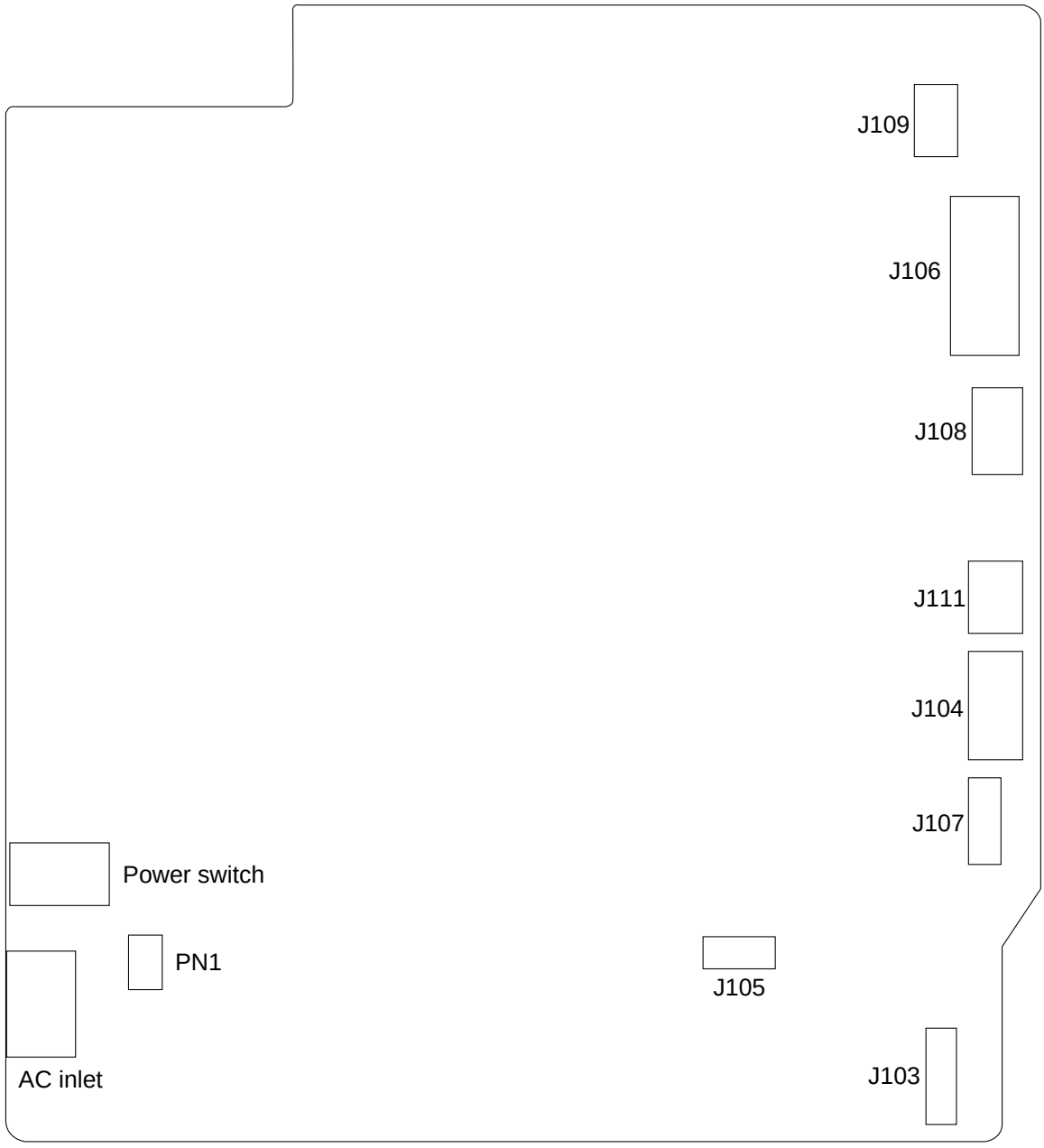


**Figure 13-409**



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## 3. Feeder controller PCB (Cassette feeder)

**Figure 13-410**


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# V. SERVICE MODE

## A. Overview

The items which may be checked or set in the service mode are described below.

The service mode in this machine is structured along the lines of the conventional facsimile service mode, and its contents and operation methods comply with that mode. The service mode is divided into the following 13 blocks.

The service mode is divided into the 10 items (#1-#10) cited below. The test mode (TEST MODE) is also included as a service mode item.

#1 SSSW: service software switch
Registration and settings for basic fax service functions such as error management, echo countermeasures, communications trouble countermeasures, etc.

#2 MENU: menu switch settings
Registration and settings for functions required at installation, such as NL equalizer and output levels.

#3 NUMERIC Param: numeric parameter settings
Numeric Parameters for various conditions for the T1 Timer setting function, etc., can be input.

#4A SPECIAL: special settings (some settings can be adjusted at the time of servicing)

#4B NCU: special settings (Do not change the settings)

#4C ISDN: Not adjustable

#5 TYPE: Country version settings
When the country version settings are programmed, the standard values for each country are entered in the parameters for #1 SSSW-#4 NCU at one time.

#6 SCANNER: (some settings can be adjusted at the time of servicing)
When setting this item in the field, do not change the settings for items other than 8: CCD, when adjusting image positioning, as this may result in a deterioration of scanned image quality.

#7 PRINTER: printer function settings
Registration and setting items for basic service functions, such as conditions for reducing reception images.

#8 CLEAR: data initialization mode settings
Initializes data to initial setting values.

#9 ROM: ROM management
Displays the version number of ROM DIMM on the image processor PCB.

#10 CS SET: mirror 1 mount initial setting
Moves the mirror 1 mount to the position set at the time of shipping from the factory.

TEST MODE: Runs tests. (See page 13-111 for details)

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## B. Operating Procedures

The service mode operates according to the flow displayed in the chart below.

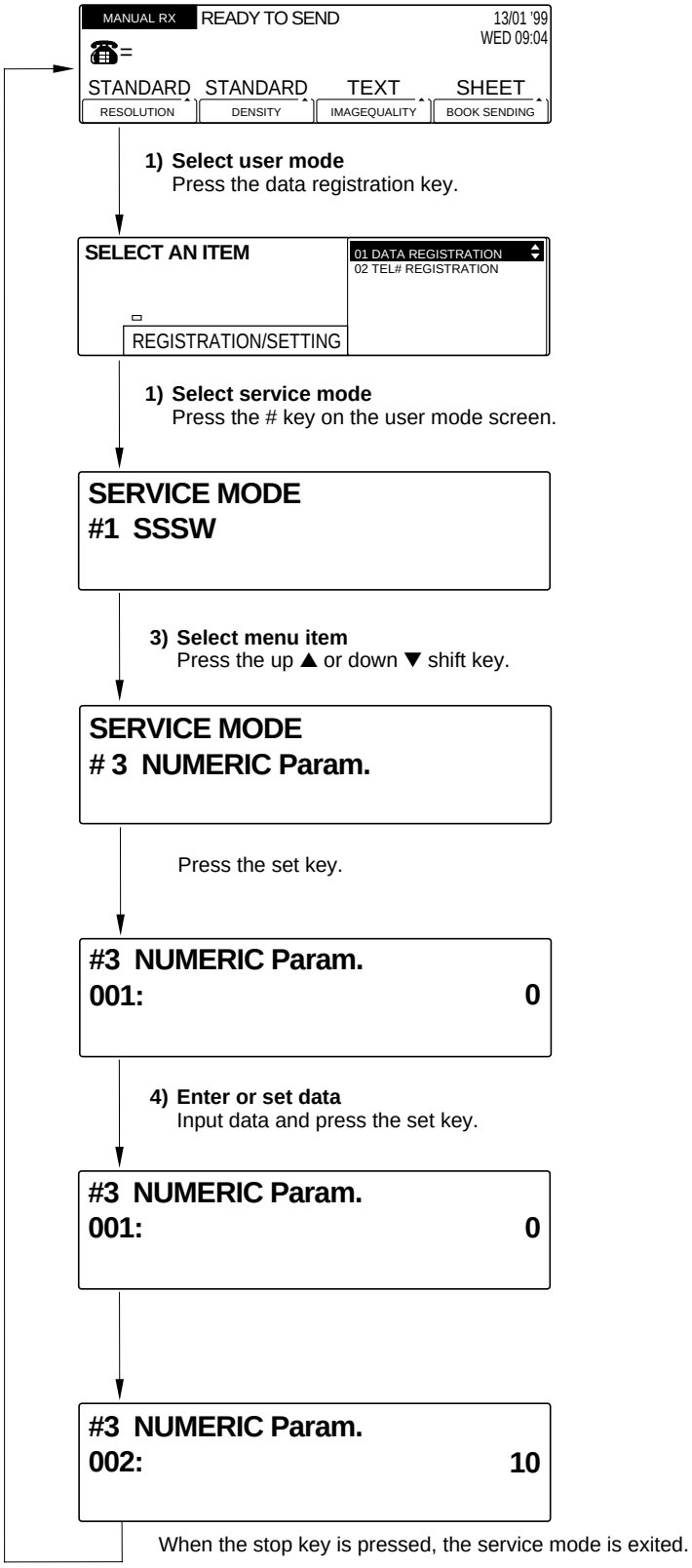


**Figure 13-501**


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## C. Service mode menu list

Characters in bold face show initial setting values.

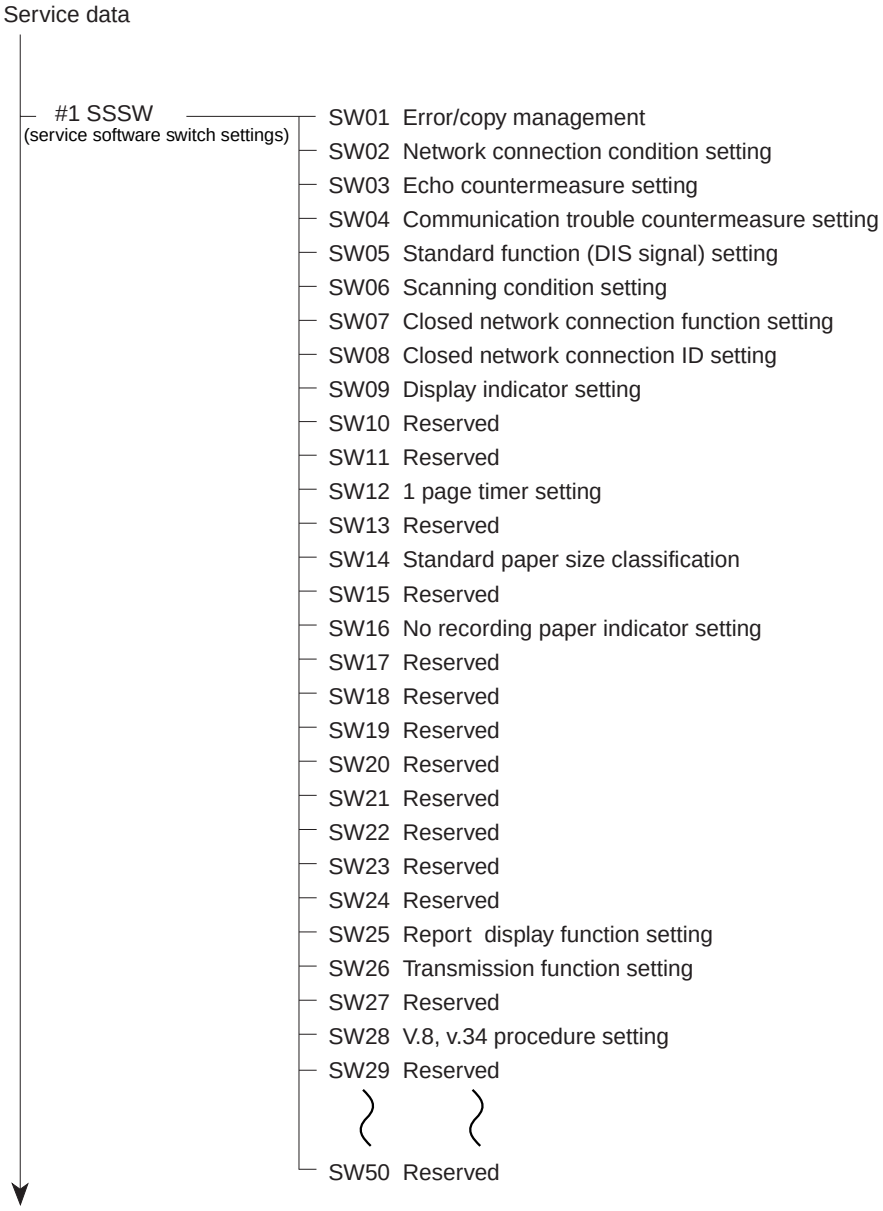


**Figure 13-502**

**Note:**

SW10, 11, 13, 15, 17-23, 27 and 29-50 are Reserved. Do not change these settings.



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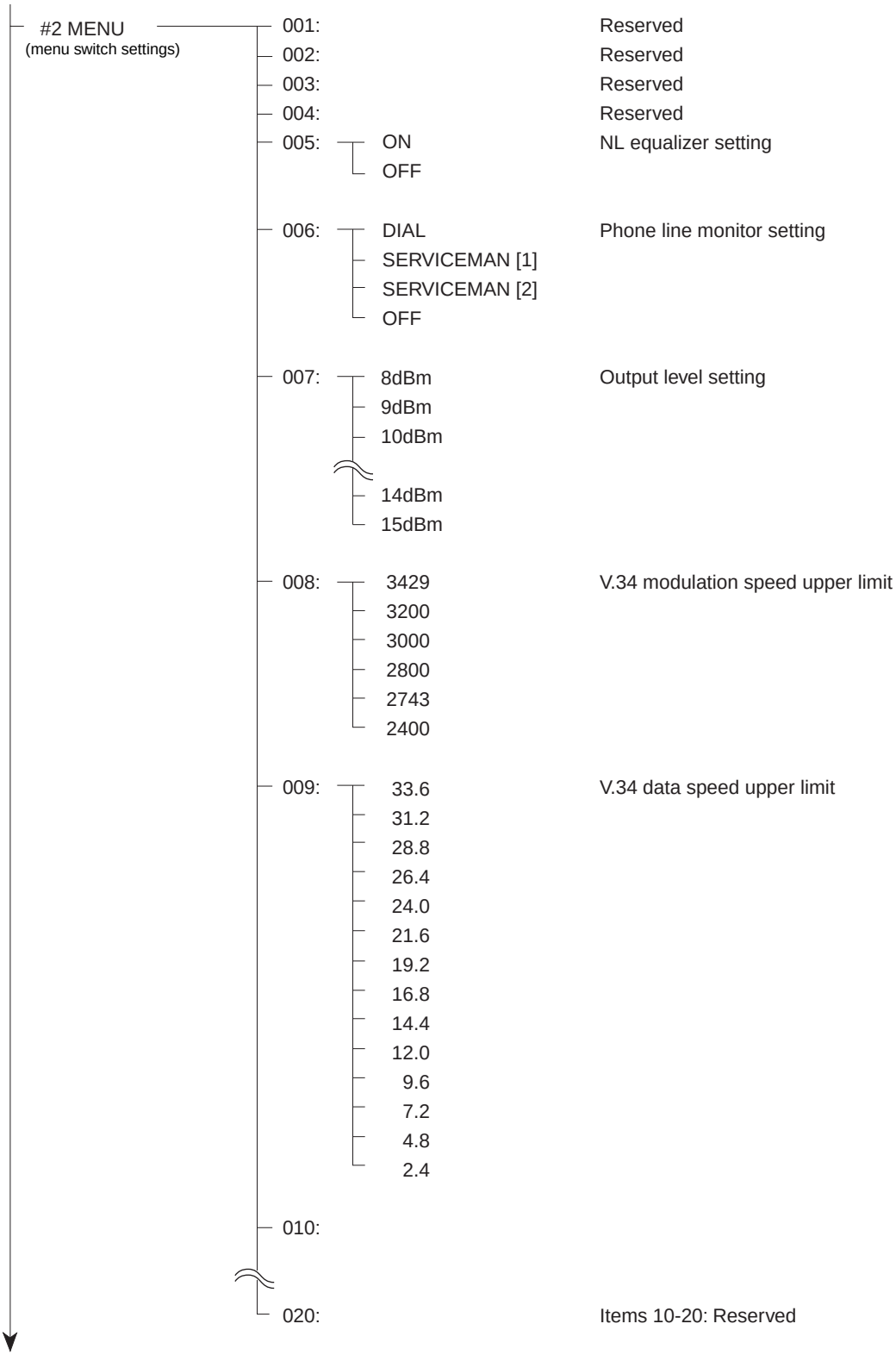


**Figure 13-503**

**Note:**

No. 01-04, 10-20 are Reserved. Do not change these settings.


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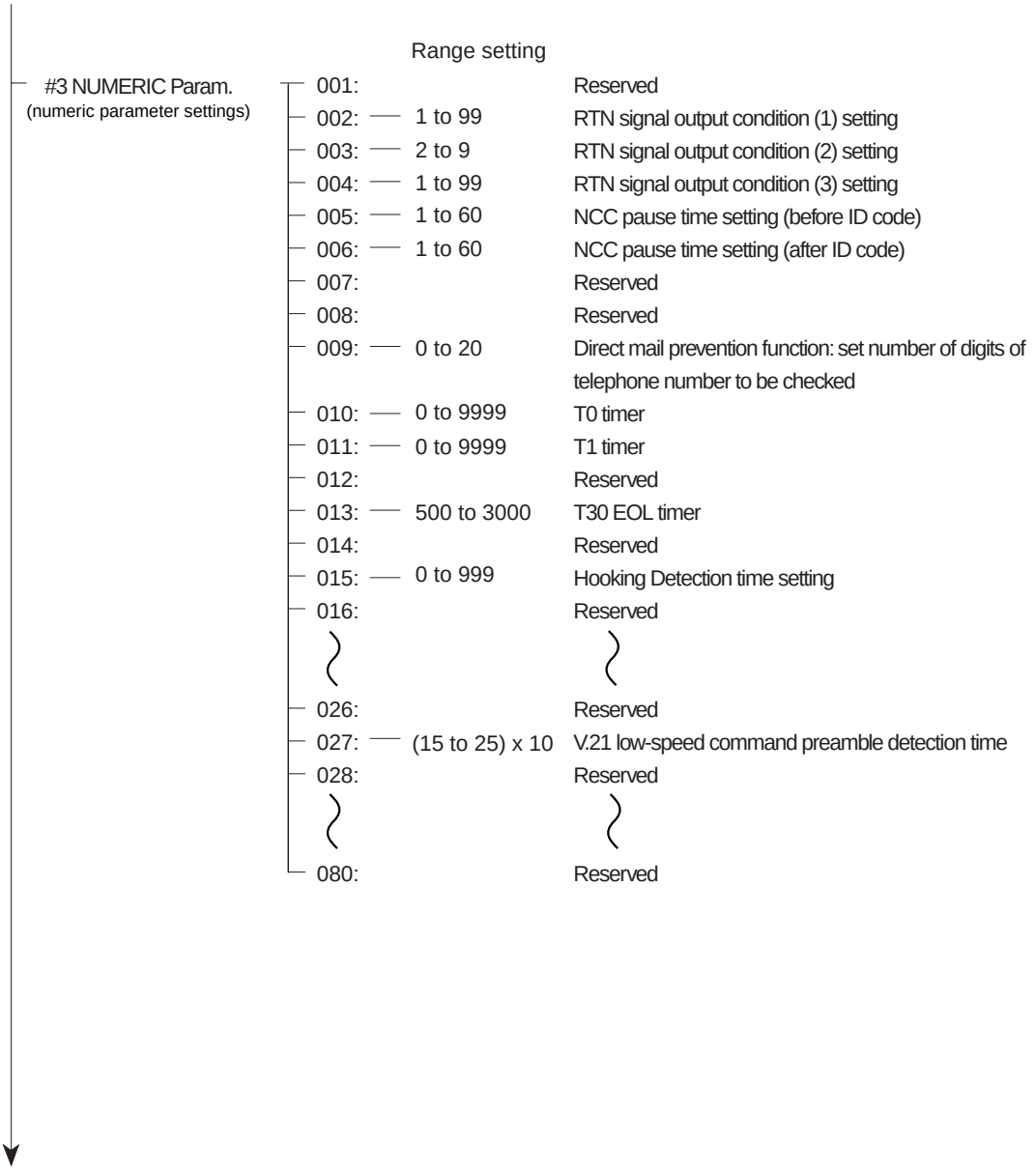
#3 NUMERIC Param.
(numeric parameter settings)
Range setting
001: Reserved
002: 1 to 99 RTN signal output condition (1) setting
003: 2 to 9 RTN signal output condition (2) setting
004: 1 to 99 RTN signal output condition (3) setting
005: 1 to 60 NCC pause time setting (before ID code)
006: 1 to 60 NCC pause time setting (after ID code)
007: Reserved
008: Reserved
009: 0 to 20 Direct mail prevention function: set number of digits of telephone number to be checked
010: 0 to 9999 T0 timer
011: 0 to 9999 T1 timer
012: Reserved
013: 500 to 3000 T30 EOL timer
014: Reserved
015: 0 to 999 Hooking Detection time setting
016: Reserved
026: Reserved
027: (15 to 25) x 10 V.21 low-speed command preamble detection time
028: Reserved
080: Reserved

**Figure 13-504**

**Caution:**

No. 001, 007, 008, 012, 014, 016-026 and 028-080 are Reserved. Do not change the settings.

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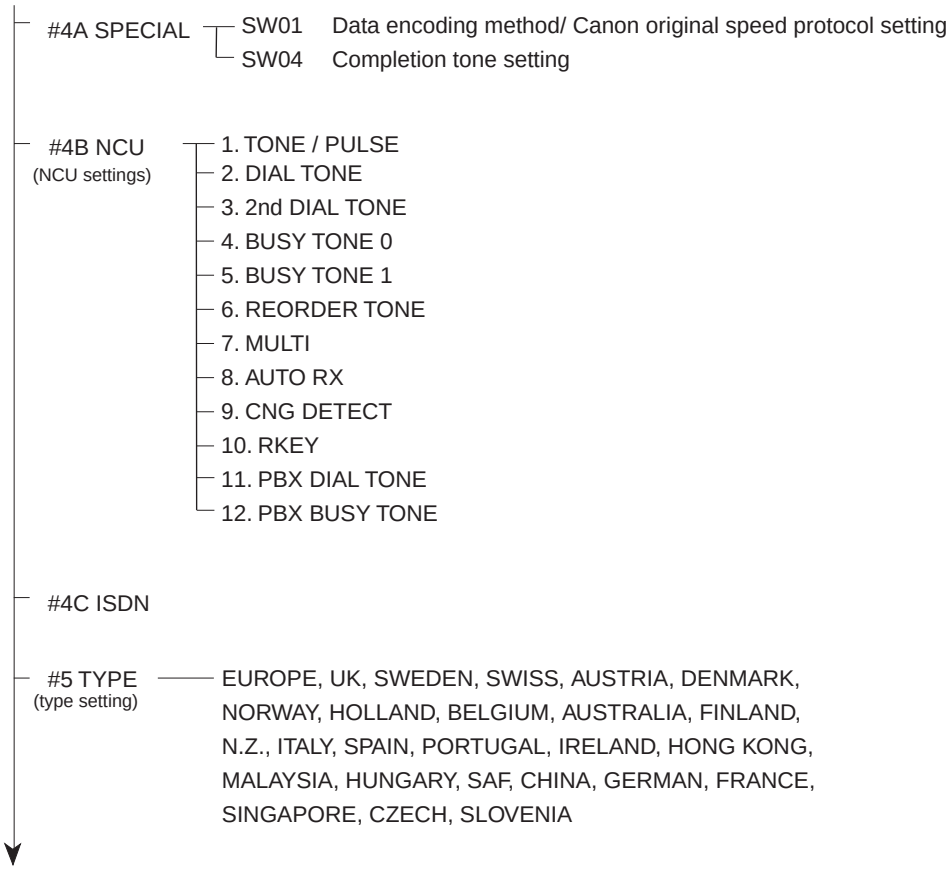


**Figure 13-505**

#4A SPECIAL
Do not change settings for items other than SW01 and SW04.

#4B NCU (NCU setting)
Do not change the settings.

#4C ISDN
Do not change the settings.

#5 TYPE
When the country version settings are programmed, the standard values for each country are entered in the parameters for #1 SSSW – #4 NCU at one time.


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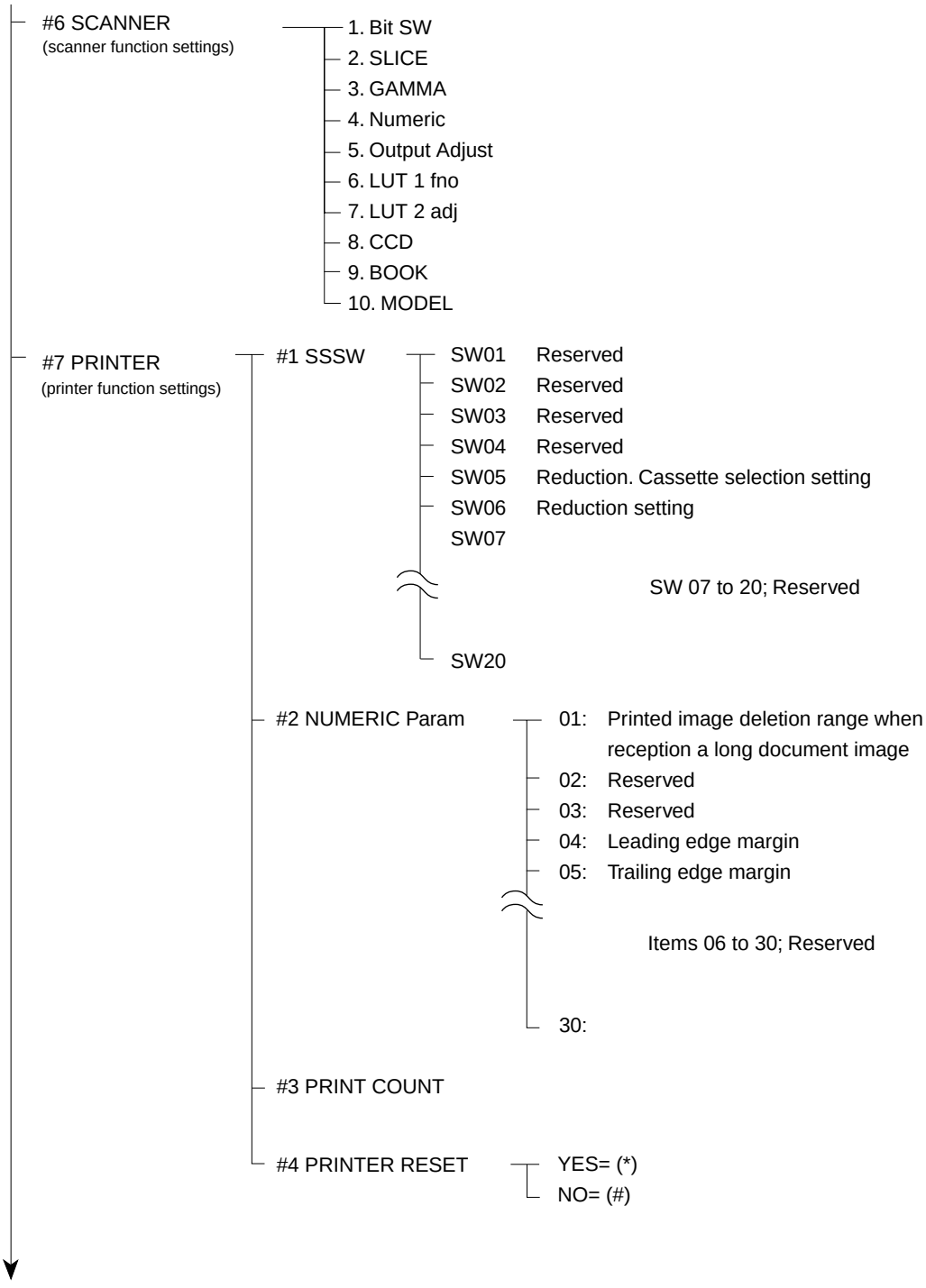


**Figure 13-506**

**Note:**

#6 SCANNER (Scanner function settings)
The quality of scanned images may be adversely affected, depending on this setting. 8.CCDmay be changed when adjusting the image position, but do not adjust any other item settings.
#7 PRINTER (Printer function settings)
SW01-04, 07-20, No. 02, 03, and 06-30 are Reserved. Do not change the settings.

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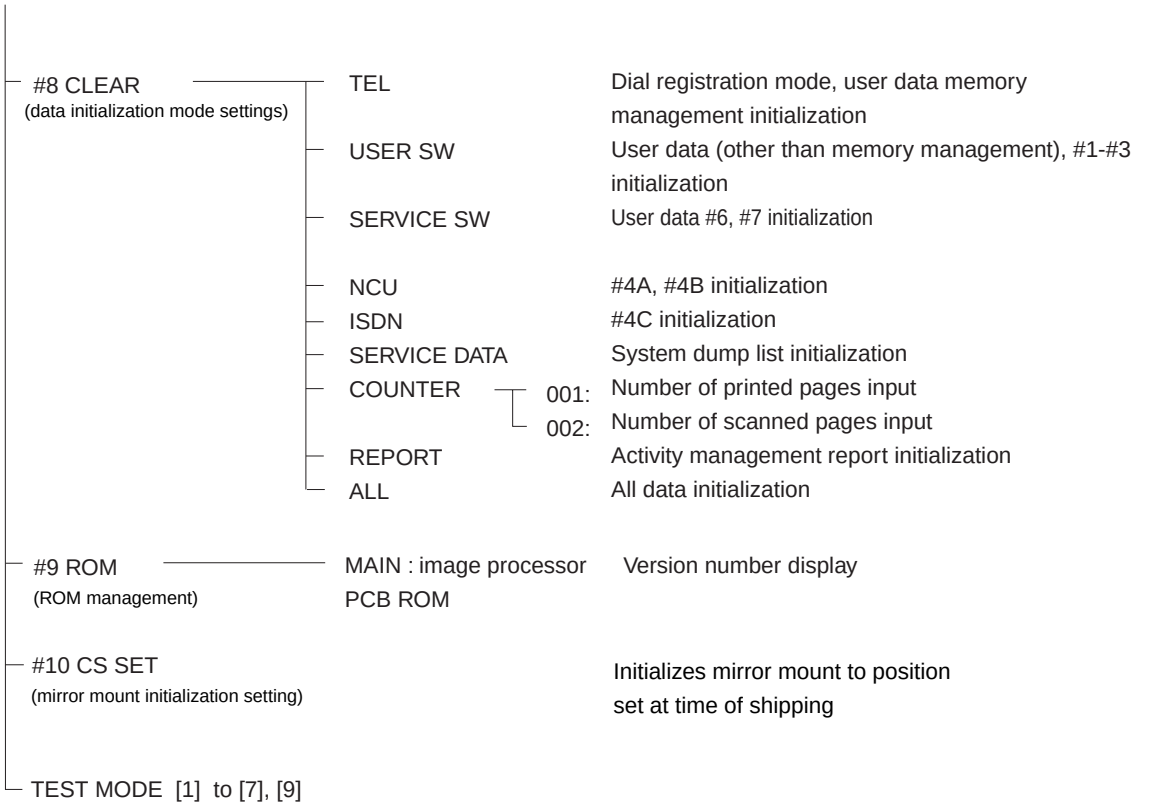


**Figure 13-507**


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# D. SSSW Default Setting

**SSSW Default Setting**

| TYPE | EUROPE | U.K. | SWEDEN | SWISS | AUSTRIA | DENMARK |
|---|---|---|---|---|---|---|
| **#1 SSSW** | | | | | | |
| SW01 | 00010000 | 00010000 | 00010000 | 00010000 | 00010000 | 00010000 |
| SW02 | 00000000 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW03 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW04 | 10000000 | 10000000 | 10000010 | 10000010 | 10000010 | 10000000 |
| SW05 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW06 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW07 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW08 | 00000000 | 00000001 | 00000001 | 00000001 | 00000001 | 00000001 |
| SW09 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW10 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW11 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW12 | 00000010 | 00000010 | 00000010 | 00000010 | 00000010 | 00000010 |
| SW13 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW14 | 00000010 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW15 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW16 | 00000011 | 00000011 | 00000011 | 00000011 | 00000011 | 00000011 |
| SW17 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW18 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW19 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW20 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW21 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW22 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW23 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW24 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW25 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW26 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW27 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW28 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW29 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ≀ | ≀ | ≀ | ≀ | ≀ | ≀ | ≀ |
| SW50 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| **#2 MENU** | | | | | | |
| 005: | OFF | OFF | OFF | OFF | OFF | OFF |
| 006: | DIAL | DIAL | DIAL | DIAL | DIAL | DIAL |
| 007: | 10 | 10 | 10 | 10 | 6 | 10 |
| 008: | 3429 | 3429 | 3429 | 3429 | 3429 | 3429 |
| 009: | 33.6 | 33.6 | 33.6 | 33.6 | 33.6 | 33.6 |
| 010: | 25Hz | 25Hz | 25Hz | 25Hz | 25Hz | 25Hz |

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## SSSW Default Setting

| TYPE | NORWAY | HOLLAND | BELGIUM | AUSTRALIA | FINLAND | N.Z. |
|---|---|---|---|---|---|---|
| **#1 SSSW** | | | | | | |
| SW01 | 00010000 | 00010000 | 00010000 | 00010000 | 00010000 | 00010000 |
| SW02 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW03 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW04 | 10000010 | 10000010 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW05 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW06 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW07 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW08 | 00000001 | 00000001 | 00000001 | 00000001 | 00000001 | 00000001 |
| SW09 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW10 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW11 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW12 | 00000010 | 00000010 | 00000010 | 00000010 | 00000010 | 00000010 |
| SW13 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW14 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW15 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW16 | 00000011 | 00000011 | 00000011 | 00000011 | 00000011 | 00000011 |
| SW17 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW18 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW19 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW20 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW21 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW22 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW23 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW24 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW25 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW26 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW27 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW28 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW29 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW30 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ~ | ~ | ~ | ~ | ~ | ~ | ~ |
| SW50 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| **#2 MENU** | | | | | | |
| 005: | OFF | OFF | OFF | OFF | OFF | OFF |
| 006: | DIAL | DIAL | DIAL | DIAL | DIAL | DIAL |
| 007: | 10 | 10 | 10 | 12 | 10 | 13 |
| 008: | 3429 | 3429 | 3429 | 3429 | 3429 | 3429 |
| 009: | 33.6 | 33.6 | 33.6 | 33.6 | 33.6 | 33.6 |
| 010: | 25Hz | 25Hz | 25Hz | 25Hz | 25Hz | 25Hz |


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## SSSW Default Setting

| TYPE | ITALY | SPAIN | PORTUGAL | IRELAND | HONG KONG | MALAYSIA |
|---|---|---|---|---|---|---|
| **#1 SSSW** | | | | | | |
| SW01 | 00010000 | 00010000 | 00010000 | 00010000 | 00010000 | 00010000 |
| SW02 | 10000000 | 10000000 | 10000000 | 10000000 | 00000000 | 00000000 |
| SW03 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW04 | 10000010 | 10000010 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW05 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW06 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW07 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW08 | 00000001 | 00000001 | 00000001 | 00000001 | 00000000 | 00000000 |
| SW09 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW10 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW11 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW12 | 00000010 | 00000010 | 00000010 | 00000010 | 00000010 | 00000010 |
| SW13 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW14 | 00000000 | 00000000 | 00000000 | 00000000 | 00000010 | 00000010 |
| SW15 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW16 | 00000011 | 00000011 | 00000011 | 00000011 | 00000011 | 00000011 |
| SW17 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW18 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW19 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW20 | 01000000 | 01000000 | 01000000 | 01000000 | 01000000 | 01000000 |
| SW21 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW22 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW23 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW24 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW25 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW26 | 10000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW27 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW28 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW29 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ≀ | ≀ | ≀ | ≀ | ≀ | ≀ | ≀ |
| SW50 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| **#2 MENU** | | | | | | |
| 005: | OFF | OFF | OFF | OFF | OFF | OFF |
| 006: | DIAL | DIAL | DIAL | DIAL | DIAL | DIAL |
| 007: | 6 | 10 | 10 | 10 | 10 | 10 |
| 008: | 3429 | 3429 | 3429 | 3429 | 3429 | 3429 |
| 009: | 33.6 | 33.6 | 33.6 | 33.6 | 33.6 | 33.6 |
| 010: | 25Hz | 25Hz | 25Hz | 25Hz | 25Hz | 25Hz |

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## SSSW Default Setting

| TYPE | HUNGARY | SAF | CHINA | GERMAN | FRANCE | SINGAPORE |
|---|---|---|---|---|---|---|
| **#1 SSSW** | | | | | | |
| SW01 | 00010000 | 00010000 | 00010000 | 00010000 | 00010000 | 00010000 |
| SW02 | 10000000 | 10000000 | 00000000 | 10000000 | 10000000 | 00000000 |
| SW03 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW04 | 10000000 | 10000000 | 10000000 | 00000010 | 00000010 | 10000000 |
| SW05 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW06 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW07 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW08 | 00000001 | 00000001 | 00000000 | 00000001 | 00000001 | 00000000 |
| SW09 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW10 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW11 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW12 | 00000010 | 00000010 | 00000010 | 00000100 | 00000010 | 00000010 |
| SW13 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW14 | 00000000 | 00000000 | 00000010 | 00000000 | 00000000 | 00000010 |
| SW15 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW16 | 00000011 | 00000011 | 00000011 | 00000011 | 00000011 | 00000011 |
| SW17 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW18 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW19 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW20 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW21 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW22 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW23 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW24 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW25 | 00000000 | 00000000 | 00000000 | 00000001 | 00000001 | 00000000 |
| SW26 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW27 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW28 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW29 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ≀ | ≀ | ≀ | ≀ | ≀ | ≀ | ≀ |
| SW50 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| **#2 MENU** | | | | | | |
| 005: | OFF | OFF | OFF | OFF | OFF | OFF |
| 006: | DIAL | DIAL | DIAL | DIAL | DIAL | DIAL |
| 007: | 10 | 10 | 13 | 10 | 10 | 12 |
| 008: | 3429 | 3429 | 3429 | 3429 | 3429 | 3429 |
| 009: | 33.6 | 33.6 | 33.6 | 33.6 | 33.6 | 33.6 |
| 010: | 25Hz | 25Hz | 25Hz | 25Hz | 25Hz | 25Hz |


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## SSSW Default Setting

| TYPE | CZECH | SLOVENIA |
|---|---|---|
| **#1 SSSW** | | |
| SW01 | 00010000 | 00010000 |
| SW02 | 10000000 | 10000000 |
| SW03 | 00000000 | 00000000 |
| SW04 | 10000000 | 10000000 |
| SW05 | 00000000 | 00000000 |
| SW06 | 10000000 | 10000000 |
| SW07 | 00000000 | 00000000 |
| SW08 | 00000001 | 00000001 |
| SW09 | 00000000 | 00000000 |
| SW10 | 00000000 | 00000000 |
| SW11 | 00000000 | 00000000 |
| SW12 | 00000010 | 00000010 |
| SW13 | 00000000 | 00000000 |
| SW14 | 00000000 | 00000000 |
| SW15 | 00000000 | 00000000 |
| SW16 | 00000011 | 00000011 |
| SW17 | 00000000 | 00000000 |
| SW18 | 00000000 | 00000000 |
| SW19 | 00000000 | 00000000 |
| SW20 | 00000000 | 00000000 |
| SW21 | 00000000 | 00000000 |
| SW22 | 00000000 | 00000000 |
| SW23 | 00000000 | 00000000 |
| SW24 | 00000000 | 00000000 |
| SW25 | 00000000 | 00000000 |
| SW26 | 00000000 | 00000000 |
| SW27 | 00000000 | 00000000 |
| SW28 | 00000000 | 00000000 |
| SW29 | 00000000 | 00000000 |
| ≀ | ≀ | ≀ |
| SW50 | 00000000 | 00000000 |
| **#2 MENU** | | |
| 005: | OFF | OFF |
| 006: | DIAL | DIAL |
| 007: | 10 | 10 |
| 008: | 3429 | 3429 |
| 009: | 33.6 | 33.6 |
| 010: | 25Hz | 25Hz |

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## SSSW Default Setting

| TYPE | EUROPE | U.K. | SWEDEN | SWISS | AUSTRIA | DENMARK |
|---|---|---|---|---|---|---|
| **#3 NUMERIC Param** | | | | | | |
| 002: | 10 | 10 | 10 | 10 | 10 | 10 |
| 003: | 15 | 15 | 15 | 15 | 15 | 15 |
| 004: | 12 | 12 | 12 | 12 | 12 | 12 |
| 005: | 4 | 4 | 4 | 4 | 4 | 4 |
| 006: | 4 | 1 | 4 | 4 | 4 | 4 |
| 009: | 6 | 6 | 6 | 6 | 6 | 6 |
| 010: | 5500 | 5500 | 6000 | 8500 | 5500 | 5500 |
| 011: | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 |
| 015: | 120 | 120 | 120 | 120 | 120 | 120 |
| 016: | 4 | 2 | 4 | 2 | 4 | 4 |
| 017: | 100 | 40 | 100 | 100 | 100 | 75 |
| 018: | 0 | 20 | 0 | 0 | 0 | 0 |
| 019: | 400 | 200 | 400 | 400 | 400 | 250 |
| 020: | 100 | 40 | 100 | 100 | 100 | 100 |
| 021: | 0 | 20 | 0 | 0 | 0 | 0 |
| 022: | 400 | 200 | 400 | 400 | 400 | 400 |
| 023: | 4 | 4 | 4 | 4 | 4 | 4 |
| 024: | 10 | 10 | 10 | 10 | 10 | 10 |
| 025: | 60 | 60 | 60 | 60 | 60 | 60 |
| 026: | 4 | 4 | 4 | 4 | 4 | 4 |
| 030: | 20 | 20 | 20 | 20 | 20 | 20 |
| 051: | 0 | 0 | 0 | 0 | 0 | 0 |
| 052: | 0 | 0 | 0 | 0 | 0 | 0 |
| 053: | 0 | 0 | 0 | 0 | 0 | 0 |
| 054: | 0 | 0 | 0 | 0 | 0 | 0 |
| 055: | 0 | 0 | 0 | 0 | 0 | 0 |
| **#4A SPECIAL** | | | | | | |
| SW01 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW04 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| **#5 TYPE** | EUROPE | U.K. | SWEDEN | SWISS | AUSTRIA | DENMARK |


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## SSSW Default Setting

| TYPE | NORWAY | HOLLAND | BELGIUM | AUSTRALIA | FINLAND | N.Z. |
|---|---|---|---|---|---|---|
| **#3 NUMERIC Param** | | | | | | |
| 002: | 10 | 10 | 10 | 10 | 10 | 10 |
| 003: | 15 | 15 | 15 | 15 | 15 | 15 |
| 004: | 12 | 12 | 12 | 12 | 12 | 12 |
| 005: | 4 | 4 | 4 | 4 | 4 | 4 |
| 006: | 4 | 4 | 4 | 4 | 4 | 4 |
| 009: | 6 | 6 | 6 | 6 | 6 | 6 |
| 010: | 5500 | 6000 | 5500 | 5500 | 5500 | 5500 |
| 011: | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 |
| 015: | 120 | 120 | 120 | 120 | 120 | 120 |
| 016: | 2 | 4 | 2 | 4 | 4 | 2 |
| 017: | 30 | 100 | 100 | 100 | 100 | 40 |
| 018: | 30 | 0 | 0 | 0 | 0 | 20 |
| 019: | 400 | 400 | 300 | 400 | 400 | 200 |
| 020: | 30 | 100 | 100 | 100 | 100 | 40 |
| 021: | 30 | 0 | 0 | 0 | 0 | 20 |
| 022: | 400 | 400 | 300 | 400 | 400 | 200 |
| 023: | 4 | 4 | 4 | 4 | 4 | 4 |
| 024: | 10 | 10 | 10 | 10 | 12 | 10 |
| 025: | 60 | 60 | 60 | 60 | 60 | 60 |
| 026: | 4 | 4 | 4 | 4 | 4 | 4 |
| 030: | 20 | 20 | 20 | 20 | 20 | 20 |
| **#4A SPECIAL** | | | | | | |
| SW01 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW04 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| **#5 TYPE** | NORWAY | HOLLAND | BELGIUM | AUSTRALIA | FINLAND | N.Z. |

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## SSSW Default Setting

| TYPE | ITALY | SPAIN | PORTUGAL | IRELAND | HONG KONG | MALAYSIA |
|---|---|---|---|---|---|---|
| **#3 NUMERIC Param** | | | | | | |
| 002: | 10 | 10 | 10 | 10 | 10 | 10 |
| 003: | 15 | 15 | 15 | 15 | 15 | 15 |
| 004: | 12 | 12 | 12 | 12 | 12 | 12 |
| 005: | 4 | 15 | 4 | 4 | 4 | 4 |
| 006: | 4 | 3 | 4 | 4 | 1 | 4 |
| 009: | 6 | 6 | 6 | 6 | 6 | 6 |
| 010: | 5500 | 5500 | 5500 | 5500 | 5500 | 5500 |
| 011: | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 |
| 015: | 120 | 120 | 120 | 120 | 120 | 120 |
| 016: | 4 | 4 | 4 | 4 | 4 | 4 |
| 017: | 30 | 150 | 40 | 40 | 40 | 100 |
| 018: | 30 | 0 | 20 | 20 | 20 | 0 |
| 019: | 400 | 300 | 200 | 200 | 200 | 400 |
| 020: | 30 | 40 | 40 | 40 | 40 | 100 |
| 021: | 30 | 10 | 20 | 20 | 20 | 0 |
| 022: | 400 | 400 | 200 | 200 | 200 | 400 |
| 023: | 4 | 4 | 4 | 4 | 4 | 4 |
| 024: | 10 | 10 | 10 | 10 | 10 | 10 |
| 025: | 60 | 60 | 60 | 60 | 60 | 60 |
| 026: | 4 | 4 | 4 | 4 | 4 | 4 |
| 030: | 20 | 20 | 20 | 20 | 20 | 20 |
| **#4A SPECIAL** | | | | | | |
| SW01 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW04 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| **#5 TYPE** | ITALY | SPAIN | PORTUGAL | IRELAND | HONG KONG | MALAYSIA |


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## SSSW Default Setting

| TYPE | HUNGARY | SAF | CHINA | GERMAN | FRANCE | SINGAPORE |
|---|---|---|---|---|---|---|
| **#3 NUMERIC Param** | | | | | | |
| 002: | 10 | 10 | 10 | 8 | 8 | 10 |
| 003: | 15 | 15 | 15 | 15 | 15 | 15 |
| 004: | 12 | 12 | 12 | 6 | 12 | 12 |
| 005: | 4 | 4 | 4 | 4 | 4 | 4 |
| 006: | 4 | 4 | 4 | 4 | 4 | 4 |
| 009: | 6 | 6 | 6 | 6 | 6 | 6 |
| 010: | 5500 | 3500 | 4500 | 5500 | 4000 | 5500 |
| 011: | 3500 | 3500 | 3500 | 3500 | 3800 | 3500 |
| 015: | 120 | 120 | 120 | 120 | 120 | 120 |
| 016: | 4 | 4 | 4 | 4 | 4 | 4 |
| 017: | 100 | 40 | 100 | 40 | 30 | 100 |
| 018: | 0 | 20 | 0 | 20 | 30 | 0 |
| 019: | 400 | 200 | 400 | 200 | 400 | 400 |
| 020: | 100 | 40 | 100 | 100 | 150 | 100 |
| 021: | 0 | 20 | 0 | 0 | 0 | 0 |
| 022: | 400 | 200 | 400 | 200 | 300 | 400 |
| 023: | 4 | 4 | 4 | 9 | 6 | 4 |
| 024: | 10 | 10 | 10 | 10 | 10 | 10 |
| 025: | 60 | 60 | 60 | 60 | 60 | 60 |
| 026: | 5 | 5 | 5 | 5 | 5 | 5 |
| 030: | 20 | 20 | 20 | 20 | 20 | 20 |
| **#4A SPECIAL** | | | | | | |
| SW01 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW04 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| **#5 TYPE** | HUNGARY | SAF | CHINA | GERMAN | FRANCE | SINGAPORE |

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## SSSW Default Setting

| TYPE | CZECH | SLOVENIA |
|---|---|---|
| **#3 NUMERIC Param** | | |
| 002: | 10 | 10 |
| 003: | 15 | 15 |
| 004: | 12 | 12 |
| 005: | 4 | 4 |
| 006: | 4 | 4 |
| 009: | 6 | 6 |
| 010: | 5500 | 5500 |
| 011: | 3500 | 3500 |
| 015: | 120 | 120 |
| 016: | 4 | 4 |
| 017: | 100 | 100 |
| 018: | 0 | 0 |
| 019: | 400 | 400 |
| 020: | 100 | 100 |
| 021: | 0 | 0 |
| 022: | 400 | 400 |
| 023: | 4 | 4 |
| 024: | 10 | 10 |
| 025: | 60 | 60 |
| 026: | 4 | 4 |
| 030: | 20 | 20 |
| **#4A SPECIAL** | | |
| SW01 | 00000000 | 00000000 |
| SW04 | 00000000 | 00000000 |
| **#5 TYPE** | CZECH | SLOVENIA |


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## SSSW Default Setting

| TYPE | EUROPE | U.K. | SWEDEN | SWISS | AUSTRIA | DENMARK |
|---|---|---|---|---|---|---|
| **#7 PRINTER** | | | | | | |
| SW01 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW02 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW03 | 00000101 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW04 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW05 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW06 | 00000100 | 00000100 | 00000100 | 00000100 | 00000100 | 00000100 |
| SW07 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW08 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW09 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW10 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW11 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW12 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW13 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW14 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW15 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW16 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW17 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW18 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW19 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW20 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| 001: | 15 | 15 | 15 | 15 | 15 | 15 |
| 002: | 0 | 0 | 0 | 0 | 0 | 0 |
| 003: | 0 | 0 | 0 | 0 | 0 | 0 |
| 004: | 4 | 4 | 4 | 4 | 4 | 4 |
| 005: | 7 | 7 | 7 | 7 | 7 | 7 |
| 006: | 0 | 0 | 0 | 0 | 0 | 0 |
| 007: | 0 | 0 | 0 | 0 | 0 | 0 |
| 008: | 0 | 0 | 0 | 0 | 0 | 0 |
| 009: | 0 | 0 | 0 | 0 | 0 | 0 |
| 010: | 0 | 0 | 0 | 0 | 0 | 0 |
| 011: | 0 | 0 | 0 | 0 | 0 | 0 |
| 012: | 0 | 0 | 0 | 0 | 0 | 0 |
| 013: | 0 | 0 | 0 | 0 | 0 | 0 |
| 014: | 0 | 0 | 0 | 0 | 0 | 0 |
| 015: | 11 | 11 | 11 | 11 | 11 | 11 |
| 016: | 10 | 10 | 10 | 10 | 10 | 10 |
| 017: | 10 | 10 | 10 | 10 | 10 | 10 |
| 018: | 1 | 1 | 1 | 1 | 1 | 1 |
| 019: | 1 | 1 | 1 | 1 | 1 | 1 |
| 020: | 0 | 0 | 0 | 0 | 0 | 0 |
| 021: | 0 | 0 | 0 | 0 | 0 | 0 |
| 022: | 0 | 0 | 0 | 0 | 0 | 0 |
| 023: | 0 | 0 | 0 | 0 | 0 | 0 |
| 024: | 0 | 0 | 0 | 0 | 0 | 0 |
| 025: | 0 | 0 | 0 | 0 | 0 | 0 |
| 026: | 0 | 0 | 0 | 0 | 0 | 0 |
| 027: | 0 | 0 | 0 | 0 | 0 | 0 |
| 028: | 0 | 0 | 0 | 0 | 0 | 0 |
| 029: | 0 | 0 | 0 | 0 | 0 | 0 |
| 030: | 0 | 0 | 0 | 0 | 0 | 0 |

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## SSSW Default Setting

| TYPE | NORWAY | HOLLAND | BELGIN | AUSTRALIA | FINLAND | N.Z. |
|---|---|---|---|---|---|---|
| **#7 PRINTER** | | | | | | |
| SW01 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW02 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW03 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW04 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW05 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW06 | 00000100 | 00000100 | 00000100 | 00000100 | 00000100 | 00000100 |
| SW07 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW08 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW09 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW10 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW11 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW12 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW13 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW14 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW15 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW16 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW17 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW18 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW19 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW20 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| 001: | 15 | 15 | 15 | 15 | 15 | 15 |
| 002: | 0 | 0 | 0 | 0 | 0 | 0 |
| 003: | 0 | 0 | 0 | 0 | 0 | 0 |
| 004: | 4 | 4 | 4 | 4 | 4 | 4 |
| 005: | 7 | 7 | 7 | 7 | 7 | 7 |
| 006: | 0 | 0 | 0 | 0 | 0 | 0 |
| 007: | 0 | 0 | 0 | 0 | 0 | 0 |
| 008: | 0 | 0 | 0 | 0 | 0 | 0 |
| 009: | 0 | 0 | 0 | 0 | 0 | 0 |
| 010: | 0 | 0 | 0 | 0 | 0 | 0 |
| 011: | 0 | 0 | 0 | 0 | 0 | 0 |
| 012: | 0 | 0 | 0 | 0 | 0 | 0 |
| 013: | 0 | 0 | 0 | 0 | 0 | 0 |
| 014: | 0 | 0 | 0 | 0 | 0 | 0 |
| 015: | 11 | 11 | 11 | 11 | 11 | 11 |
| 016: | 10 | 10 | 10 | 10 | 10 | 10 |
| 017: | 10 | 10 | 10 | 10 | 10 | 10 |
| 018: | 1 | 1 | 1 | 1 | 1 | 1 |
| 019: | 1 | 1 | 1 | 1 | 1 | 1 |
| 020: | 0 | 0 | 0 | 0 | 0 | 0 |
| 021: | 0 | 0 | 0 | 0 | 0 | 0 |
| 022: | 0 | 0 | 0 | 0 | 0 | 0 |
| 023: | 0 | 0 | 0 | 0 | 0 | 0 |
| 024: | 0 | 0 | 0 | 0 | 0 | 0 |
| 025: | 0 | 0 | 0 | 0 | 0 | 0 |
| 026: | 0 | 0 | 0 | 0 | 0 | 0 |
| 027: | 0 | 0 | 0 | 0 | 0 | 0 |
| 028: | 0 | 0 | 0 | 0 | 0 | 0 |
| 029: | 0 | 0 | 0 | 0 | 0 | 0 |
| 030: | 0 | 0 | 0 | 0 | 0 | 0 |


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## SSSW Default Setting

| TYPE | ITALY | SPAIN | PORTUGAL | IRELAND | HONGKONG | MALAYSIA |
|---|---|---|---|---|---|---|
| **#7 PRINTER** | | | | | | |
| SW01 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW02 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW03 | 00000000 | 00000000 | 00000000 | 00000000 | 00000101 | 00000101 |
| SW04 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW05 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW06 | 00000100 | 00000100 | 00000100 | 00000100 | 00000100 | 00000100 |
| SW07 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW08 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW09 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW10 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW11 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW12 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW13 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW14 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW15 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW16 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW17 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW18 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW19 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW20 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| 001: | 15 | 15 | 15 | 15 | 15 | 15 |
| 002: | 0 | 0 | 0 | 0 | 0 | 0 |
| 003: | 0 | 0 | 0 | 0 | 0 | 0 |
| 004: | 4 | 4 | 4 | 4 | 4 | 4 |
| 005: | 7 | 7 | 7 | 7 | 7 | 7 |
| 006: | 0 | 0 | 0 | 0 | 0 | 0 |
| 007: | 0 | 0 | 0 | 0 | 0 | 0 |
| 008: | 0 | 0 | 0 | 0 | 0 | 0 |
| 009: | 0 | 0 | 0 | 0 | 0 | 0 |
| 010: | 0 | 0 | 0 | 0 | 0 | 0 |
| 011: | 0 | 0 | 0 | 0 | 0 | 0 |
| 012: | 0 | 0 | 0 | 0 | 0 | 0 |
| 013: | 0 | 0 | 0 | 0 | 0 | 0 |
| 014: | 0 | 0 | 0 | 0 | 0 | 0 |
| 015: | 11 | 11 | 11 | 11 | 11 | 11 |
| 016: | 10 | 10 | 10 | 10 | 10 | 10 |
| 017: | 10 | 10 | 10 | 10 | 10 | 10 |
| 018: | 1 | 1 | 1 | 1 | 1 | 1 |
| 019: | 1 | 1 | 1 | 1 | 1 | 1 |
| 020: | 0 | 0 | 0 | 0 | 0 | 0 |
| 021: | 0 | 0 | 0 | 0 | 0 | 0 |
| 022: | 0 | 0 | 0 | 0 | 0 | 0 |
| 023: | 0 | 0 | 0 | 0 | 0 | 0 |
| 024: | 0 | 0 | 0 | 0 | 0 | 0 |
| 025: | 0 | 0 | 0 | 0 | 0 | 0 |
| 026: | 0 | 0 | 0 | 0 | 0 | 0 |
| 027: | 0 | 0 | 0 | 0 | 0 | 0 |
| 028: | 0 | 0 | 0 | 0 | 0 | 0 |
| 029: | 0 | 0 | 0 | 0 | 0 | 0 |
| 030: | 0 | 0 | 0 | 0 | 0 | 0 |

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## SSSW Default Setting

| TYPE | HUNGARY | SAF | CHINA | GERMAN | FRANCE | SINGAPORE |
|---|---|---|---|---|---|---|
| **#7 PRINTER** | | | | | | |
| SW01 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW02 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW03 | 00000000 | 00000000 | 00000101 | 00000000 | 00000000 | 00000101 |
| SW04 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW05 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 | 10000000 |
| SW06 | 00000100 | 00000100 | 00000100 | 00000100 | 00000100 | 00000100 |
| SW07 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW08 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW09 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW10 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW11 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW12 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW13 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW14 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW15 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW16 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW17 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW18 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW19 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| SW20 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| 001: | 15 | 15 | 15 | 15 | 15 | 15 |
| 002: | 0 | 0 | 0 | 0 | 0 | 0 |
| 003: | 0 | 0 | 0 | 0 | 0 | 0 |
| 004: | 4 | 4 | 4 | 4 | 4 | 4 |
| 005: | 7 | 7 | 7 | 7 | 7 | 7 |
| 006: | 0 | 0 | 0 | 0 | 0 | 0 |
| 007: | 0 | 0 | 0 | 0 | 0 | 0 |
| 008: | 0 | 0 | 0 | 0 | 0 | 0 |
| 009: | 0 | 0 | 0 | 0 | 0 | 0 |
| 010: | 0 | 0 | 0 | 0 | 0 | 0 |
| 011: | 0 | 0 | 0 | 0 | 0 | 0 |
| 012: | 0 | 0 | 0 | 0 | 0 | 0 |
| 013: | 0 | 0 | 0 | 0 | 0 | 0 |
| 014: | 0 | 0 | 0 | 0 | 0 | 0 |
| 015: | 11 | 11 | 11 | 11 | 11 | 11 |
| 016: | 10 | 10 | 10 | 10 | 10 | 10 |
| 017: | 10 | 10 | 10 | 10 | 10 | 10 |
| 018: | 1 | 1 | 1 | 1 | 1 | 1 |
| 019: | 1 | 1 | 1 | 1 | 1 | 1 |
| 020: | 0 | 0 | 0 | 0 | 0 | 0 |
| 021: | 0 | 0 | 0 | 0 | 0 | 0 |
| 022: | 0 | 0 | 0 | 0 | 0 | 0 |
| 023: | 0 | 0 | 0 | 0 | 0 | 0 |
| 024: | 0 | 0 | 0 | 0 | 0 | 0 |
| 025: | 0 | 0 | 0 | 0 | 0 | 0 |
| 026: | 0 | 0 | 0 | 0 | 0 | 0 |
| 027: | 0 | 0 | 0 | 0 | 0 | 0 |
| 028: | 0 | 0 | 0 | 0 | 0 | 0 |
| 029: | 0 | 0 | 0 | 0 | 0 | 0 |
| 030: | 0 | 0 | 0 | 0 | 0 | 0 |


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## SSSW Default Setting

| TYPE | CZECH | SLOVENIA |
|---|---|---|
| **#7 PRINTER** | | |
| SW01 | 00000000 | 00000000 |
| SW02 | 00000000 | 00000000 |
| SW03 | 00000000 | 00000000 |
| SW04 | 00000000 | 00000000 |
| SW05 | 10000000 | 10000000 |
| SW06 | 00000100 | 00000100 |
| SW07 | 00000000 | 00000000 |
| SW08 | 00000000 | 00000000 |
| SW09 | 00000000 | 00000000 |
| SW10 | 00000000 | 00000000 |
| SW11 | 00000000 | 00000000 |
| SW12 | 00000000 | 00000000 |
| SW13 | 00000000 | 00000000 |
| SW14 | 00000000 | 00000000 |
| SW15 | 00000000 | 00000000 |
| SW16 | 00000000 | 00000000 |
| SW17 | 00000000 | 00000000 |
| SW18 | 00000000 | 00000000 |
| SW19 | 00000000 | 00000000 |
| SW20 | 00000000 | 00000000 |
| 001: | 15 | 15 |
| 002: | 0 | 0 |
| 003: | 0 | 0 |
| 004: | 4 | 4 |
| 005: | 7 | 7 |
| 006: | 0 | 0 |
| 007: | 0 | 0 |
| 008: | 0 | 0 |
| 009: | 0 | 0 |
| 010: | 0 | 0 |
| 011: | 0 | 0 |
| 012: | 0 | 0 |
| 013: | 0 | 0 |
| 014: | 0 | 0 |
| 015: | 11 | 11 |
| 016: | 10 | 10 |
| 017: | 10 | 10 |
| 018: | 1 | 1 |
| 019: | 1 | 1 |
| 020: | 0 | 0 |
| 021: | 0 | 0 |
| 022: | 0 | 0 |
| 023: | 0 | 0 |
| 024: | 0 | 0 |
| 025: | 0 | 0 |
| 026: | 0 | 0 |
| 027: | 0 | 0 |
| 028: | 0 | 0 |
| 029: | 0 | 0 |
| 030: | 0 | 0 |

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# E. Parameter settings

## 1. SSSW settings

The registration and setting items on this switch are composed of 8 bit switches. The bit switches indicated on the display are as shown below. Each bit is set to 0 or 1.

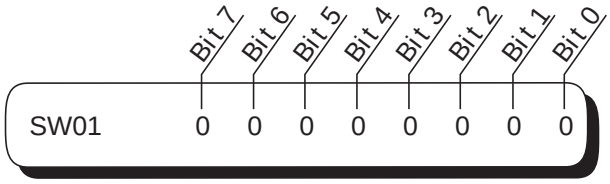
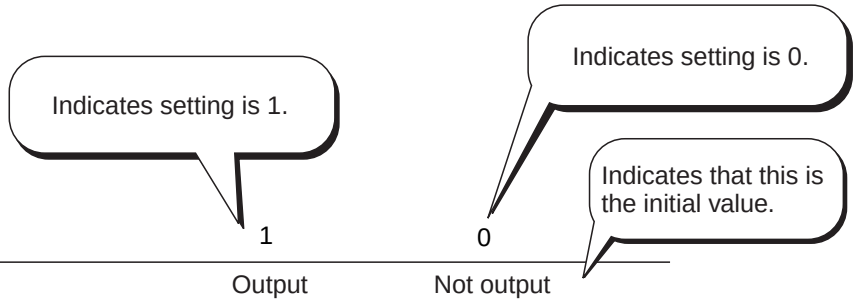



**Figure 13-508**

Information about the bit switches is displayed in the table below.




| Bit | Function | 1 | 0 |
|---|---|---|---|
| 0 | Service error code | Output | Not output |
| 1 | Error dump list | Output | Not output |
| 2 | Secret ID number when confidential reception image is forwarded according to confirmation of memory contents | Do not input | Input |
| 3 | Reserved | | |
| 4 | Reserved | | |
| 5 | Reserved | | |
| 6 | Date & Time setting restriction | Setting restricted | Setting possible |
| 7 | Restrict user settings | Setting possible | Setting restricted |

**Table 13-501**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#1 SSSW-SW01: Error, copy management

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 01 | 0 | Error code for service engineer | Output | Do not output |
| | 1 | Error dump list | Output | Do not output |
| | 2 | Secret code function when confidential reception image is forwarded by to the memory management function | Do not input | Input |
| | 3 | Reserved | | |
| | 4 | Reserved | | |
| | 5 | Reserved | | |
| | 6 | Date & Time setting restriction | Setting restricted | Setting possible |
| | 7 | Restrict user settings | Setting possible | Setting restricted |

**Table 13-502**

[Bit 0]
Service error code output selection. When “output” is selected, the service error code is indicated on the display and in the report.

[Bit 1]
Error dump list output selection. When “output” is selected, an error dump list is attached to the error transmission report and the reception results report at the time of the error, and output.

[Bit 2]
Selects whether or not to input the secret code when confidential reception images are forwarded by using the memory reference button, or when the images are deleted or printed. When “do not input” is selected, the confidential reception image will be forwarded, deleted or printed, without the secret code being input.

[Bit 6]
When “Setting restricted” is selected, certain items can not be set by the user, depending on the country setting.
When “Setting possible” is selected, all items are user selectable, regardless of the country type setting.

[Bit 7]
When “setting restricted” is selected, certain items can not be set by the user, depending on the country setting.
When “setting possible” is selected, all items are user selectable, regardless of the country type setting.

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#1 SSSW-SW02: Network connection condition settings

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 02 | 0 | Startup when there is faulty memory clear report output | Restrict | Do not restrict |
| | 1 | Reserved | | |
| | 2 | Reserved | | |
| | 3 | Reserved | | |
| | 4 | Reserved | | |
| | 5 | Reserved | | |
| | 6 | Reserved | | |
| | 7 | Reserved | | |

**Table 13-503**

[Bit 0]
Selects whether or not to go into standby when the memory clear list is not output when the machine is powered on, after an error occurs. After the screen data are cleared by selecting “Prohibit”, turn on the power and clear the error. Then the machine will go into standby after the memory clear report is output.

**Reference:**

Actions when “Prohibit” is selected

a) Error occurrence: will not receive at this time even if a transmission arrives.

b) After error clearing: memory clear report is output automatically. When an error occurs during output, return to action a).


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#1 SSSW-SW03: Echo correction settings

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 03 | 0 | Reserved | | |
| | 1 | High-speed transmission echo protect tone | Send | Do not send |
| | 2 | Reserved | | |
| | 3 | Reserved | | |
| | 4 | Transmission mode: international transmission (1) | Yes | No |
| | 5 | Transmission mode: international transmission (2), or international transmission (3) | Yes | No |
| | 6 | Transmission mode | International transmission (3) | International transmission (2) |
| | 7 | Tonal signal before CED signal transmission | Send | Do not respond |

**Table 13-504**

[Bit 1]
Selects whether or not to transmit a echo protect tone with the high-speed V.29 (baud rate is 9600bps or 7200 bps) modem signal.
When errors occur frequently during transmission due to telephone line conditions, select echo protect tone “send”. When “send” is selected, an unmodulated carrier is transmitted as a synchronising signal before sending the image at 200ms intervals.

**MEMO:**
Error codes for errors which occur at transmission due to telephone line conditions: ##100, ##104, ##281, ##283, ##750, ##755, ##760, ##765

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[Bit 4,5,6]
Selects transmission mode; international transmission (1), international transmission (2) or international transmission (3).
When errors occur frequently due to echo when sending transmissions overseas, set the transmission mode by dial registration or service software switch.

**MEMO:**

Error codes for errors which occur at transmission due to echo
##005, ##100, ##101, ##102, ##104, ##210, ##280, ##281, ##283, ##284, ##750, ##760, ##765, ##774, ##779, ##784, ##794

Settings at dial registration (user level):

When registering the 1-touch dial or coded speed dial transmission mode, set to international transmission (1). If the error is not resolved, set to international transmission (2) and international transmission (3), in that order. Transmission modes set for 1-touch dial or coded speed dial override service software switch settings.

When transmission modes are selected by these switches, international transmission mode can also be set using transmission via the numeric key pad. Refer to the chart below for settings for transmission modes.

| Bit / Transmission mode | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| International transmission (1) | * | 0 | 0 | 1 | 0 | 0 | * | 0 |
| International transmission (2) | * | 0 | 1 | 0 | 0 | 0 | * | 0 |
| International transmission (3) | * | 1 | 1 | 0 | 0 | 0 | * | 0 |

International transmission (1): ignores the first DIS signal sent by the reception machine.
International transmission (2): Sends a 1850Hz tonal signal at the time of DIS signal transmission.
International transmission (2): Sends a 1650Hz tonal signal at the time of DIS signal transmission.

**Table 13-505**

[Bit 7]
Selects whether or not to send a 1080Hz tonal signal before sending the CED signal.

**MEMO:**

Error codes for errors which occur at reception
#005, ##101, ##106, ##107, ##114, ##200, ##201, ##790


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#1 SSSW-SW04 communications trouble remedy setting

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 04 | 0 | Reserved | | |
| | 1 | CI signal frequency check | Check | Do not check |
| | 2 | Number of protocol signal's final flag sequences | 2 | 1 |
| | 3 | Reception mode after CFR signal transmission | High-speed | High-speed / low-speed |
| | 4 | Time for which low-speed signal is ignored after CFR signal transmission | 1500ms | 700ms |
| | 5 | CI signal frequency check when PBX is set | Check | Do not check |
| | 6 | CNG signal at manual transmission | Do not send | Send |
| | 7 | CED signal at manual reception | Do not send | Send |

**Table 13-506**

[Bit 1]
Select whether or not to check the CI signal frequency upon automatic reception.
If "check" is selected, the upper and lower limits of the CI signal frequency will be checked when a transmission arrives. The fax will switch to automatic reception only when both signals are within the standard range.

[Bit2]
You can select the number of final flag sequences for the protocol signal (transmission speed is 300 bps).
When the procedure signal sent out by this unit is not properly received by the destination machine, set the number to 2.

**MEMO:**
Error codes for errors which occur upon transmission
##100, ##280, ##281, ##282, ##283, ##750, ##754, ##755, ##758, ##759, ##760, ##763, ##764, ##765, ##768, ##769, ##770, ##773, ##775, ##778, ##780, ##783, ##785, ##788

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[Bit 3]
Selects the reception mode after CFR signal transmission.
When errors due to the telephone line condition occur frequently in reception, select “high-speed” reception mode and set the user data ECM reception setting off.

**MEMO:**

Error codes for errors which occur in reception due to telephone line trouble
##107, ##114, ##201
Change Bit 4 before changing this bit. If errors continue to occur, change this bit.
When “high-speed” is selected, only high-speed (image) signals will be received after CFR signal transmission.

[Bit 4]
Selects the length of time to ignore a low-speed signals after CFR signal transmission.
When the condition of the telephone line is not good and it is difficult to receive image signals, set to 1500 ms.

[Bit 5]
Selects whether or not to perform CI signal frequency check during PSTN/PBX in user data set to PBX. (This switch is only compatible with 230V machines.)

[Bit 6]
Selects whether or not to transmit a CNG signal in manual transmission.
When errors occur frequently, check whether “send” CNG signal is selected.

[Bit7]
Selects whether or not to transmit a CED signal in manual reception.
When the other party’s machine does not start transmission when manual reception is being performed, select “send”.


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#1 SSSW-SW05 Standard function (DIS signal) setting

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 05 | 0 | Reserved | | |
| | 1 | Reserved | | |
| | 2 | Reserved | | |
| | 3 | Bit transmission of DIS signal bit 33 and later | Prohibit | Do not prohibit |
| | 4 | Cut paper declaration by DIS signal | A4/B4 size | Any size |
| | 5 | Reserved | | |
| | 6 | Reserved | | |
| | 7 | Reserved | | |

**Table 13-507**

[Bit 3]
Bit transmission of DIS signal bit 33 and later.

**Note:**

When “prohibit” is selected, it becomes impossible to use superfine reception and the memory box function of other companies' machines.

[Bit 4]
Selects that the paper declared by the DIS signal is cut paper. When receiving long documents, select A4/B4 size to have the document divided by the transmitting machine.

**MEMO:**

There are cases in which long documents are not divided, depending on the type of machine which is transmitting.

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#1 SSSW-SW06: Reading condition settings

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 06 | 0 | Reserved | | |
| | 1 | Reserved | | |
| | 2 | Document length restriction | Do not restriction | 1 meter or less |
| | 3 | Reserved | | |
| | 4 | Document scanning width | Letter | A4 Prohibit |
| | 5 | Reserved | | |
| | 6 | Reserved | | |
| | 7 | Halftone and superfine | Allow | Prohibit |

**Table 13-508**

[Bit 2]
Selects the document length limit.

[Bit 4]
Selects the document scanning width. When “letter” is selected, letter size documents are read at letter width (214 mm).

[Bit 7]
Selects whether or not superfine mode can be set when an image quality mode other than TEXT mode is selected.


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#1 SSSW-SW07: closed connection function setting

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 07 | 0 | Setting prohibited | | |
| | 1 | Setting prohibited | | |
| | 2 | Setting prohibited | | |
| | 3 | Setting prohibited | | |
| | 4 | Setting prohibited | | |
| | 5 | Setting prohibited | | |
| | 6 | Closed network connection reception | Yes | No |
| | 7 | Closed network connection transmission | Õ | No |

**Table 13-509**

The closed network connection function is a function for communication only with specified faxes. This function is only available for specified faxes with machines that have the closed network connection function.

[Bit 6]
Selects whether or not to use closed network connection reception function reception.
When you wish to receive a fax only from a specified machine, select “yes” and set the same ID as the transmitting machine. The ID setting is set by the SW08 bit switch 8.

[Bit 7]
Selects whether or not to use closed network connection transmission function transmission.
When you wish to send a fax only to a specified machine, select “yes” and set the same ID as the reception machine.
The ID setting is set by the SW08 bit switch 8.
If the ID does not match that of the reception machine, an error code (#039) will be displayed.

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#1 SSSW-SW08: closed connection ID settingClosed network connection ID bit 7

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 08 | 0 | Closed network connection ID bit 0 | | |
| | 1 | Closed network connection ID bit 1 | | |
| | 2 | Closed network connection ID bit 2 | | |
| | 3 | Closed network connection ID bit 3 | | |
| | 4 | Closed network connection ID bit 4 | | |
| | 5 | Closed network connection ID bit 5 | | |
| | 6 | Closed network connection ID bit 6 | | |
| | 7 | Closed network connection ID bit 7 | | |

**Table 13-510**

When using closed network connection function, set these switches to the same ID as the other party's machine.


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#1 SSSW-SW09: Display indicator settings

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 09 | 0 | Reserved | | |
| | 1 | Reserved | | |
| | 2 | Reserved | | |
| | 3 | Reserved | | |
| | 4 | Reserved | | |
| | 5 | Consecutive polling reception | Yes | No |
| | 6 | Reserved | | |
| | 7 | Reserved | | |

**Table 13-511**

[Bit 5]
Selects whether or not to perform consecutive polling reception.
Yes: calls until the stop key is pressed.
No: consecutive polling reception is not performed.

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#1 SSSW-SW12: Page timer settings

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 12 | 0 | Page time out interval when transmitting (none when set to image mode) | 1 | 0 |
| | 1 | | 1 | 0 |
| | 2 | Page time out interval when transmitting (when set to image mode and A4 document mode) | 1 | 0 |
| | 3 | | 1 | 0 |
| | 4 | Page time out interval when receiving | 1 | 0 |
| | 5 | | 1 | 0 |
| | 6 | Reserved | | |
| | 7 | Separate transmission and reception page timer settings | Set | Do not set |

**Table 13-512**

These switches can set the page timer. When transmission or reception takes more than 32 minutes on this machine, communications are stopped. When the timer is set to other than 32 minutes, refer to the following page and set the appropriate time.

When “do not set” is selected for Bit 7, the one page time out interval is controlled by Bit 0 and Bit 0, regardless of the communication mode.


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Transmission/reception time out interval

| Bit / Time out interval | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| 8 minutes | 0 | * | * | * | * | * | 0 | 0 |
| 16 minutes | 0 | * | * | * | * | * | 0 | 0 |
| 32 minutes | 0 | * | * | * | * | * | 1 | 0 |
| 64 minutes | 0 | * | * | * | * | * | 1 | 1 |

Time out interval when transmitting (no image mode setting)

| Bit / Time out interval | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| 8 minutes | 1 | * | * | * | * | * | 0 | 0 |
| 16 minutes | 1 | * | * | * | * | * | 0 | 1 |
| 32 minutes | 1 | * | * | * | * | * | 1 | 0 |
| 64 minutes | 1 | * | * | * | * | * | 1 | 1 |

Time out interval when transmitting (image mode AA)

| Bit / Time out interval | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| 8 minutes | 1 | * | * | * | 0 | 0 | * | * |
| 16 minutes | 1 | * | * | * | 0 | 1 | * | * |
| 32 minutes | 1 | * | * | * | 1 | 0 | * | * |
| 64 minutes | 1 | * | * | * | 1 | 1 | * | * |

Time out interval when receiving

| Bit / Time out interval | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| 8 minutes | 1 | * | 0 | 0 | * | * | * | * |
| 16 minutes | 1 | * | 0 | 1 | * | * | * | * |
| 32 minutes | 1 | * | 1 | 0 | * | * | * | * |
| 64 minutes | 1 | * | 1 | 1 | * | * | * | * |

**Table 13-513**

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#1 SSSW-SW14: Standard paper size classification

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 14 | 0 | Standard paper size classification | 1 | 0 |
| | 1 | | 1 | 0 |
| | 2 | Reserved | | |
| | 3 | Reserved | | |
| | 4 | Reserved | | |
| | 5 | Reserved | | |
| | 6 | Reserved | | |
| | 7 | Reserved | | |

**Table 13-514**

[Bit0. Bit1]
The combination of Bit0 and Bit1 allows the standard paper size classification to be changed.

| Bit0 | Bit1 | Standard paper size classification |
|---|---|---|
| 0 | 0 | AB series |
| 1 | 1 | |
| 0 | 1 | INCH series |
| 1 | 0 | A series |

By setting this switch, the document paper size display and setting, and automatic identification, etc., are used to judge the standard paper size.


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#1 SSSW-SW16: Add paper indicator setting

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 25 | 0 | Add paper indicator judgment conditions | No paper in one location | No paper of the same size |
| | 1 | Multi-feeder at time of add paper judgment | Do not include in judgment conditions | Include in judgment conditions |
| | 2 | Reserved | | |
| | 3 | Reserved | | |
| | 4 | Reserved | | |
| | 5 | Reserved | | |
| | 6 | Reserved | | |
| | 7 | Reserved | | |

**Table 13-515**

[Bit 0]
Selects add paper judgment conditions.
No paper in one location: all cassettes are subject to judgment
No paper of same size: When there is paper remaining of the same size as the paper that was used up, the add paper indicator does not display.

[Bit 1]
Selects user mode>01 data registration>05 printer settings>06 name stack size>02 on. Selects whether or not to include the multi-feeder in the add paper judgment conditions when set to the size of paper used in the multi-feeder.
Effective when SW16 Bit 0 is 0.

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#1 SSSW-SW25: Report display function settings

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 25 | 0 | Transmission telephone numbers displayed in the report | Other party's number | Calling party's number |
| | 1 | Other party abbreviations displayed in the report | Leave | Clear |
| | 2 | Reserved | | |
| | 3 | Message language switch | Display | Do not display |
| | 4 | Reserved | | |
| | 5 | Reserved | | |
| | 6 | Reserved | | |
| | 7 | Reserved | | |

**Table 13-516**

[Bit 0]
Selects transmitting telephone numbers displayed in the report after transmission has ended.
Calling party's number: displays the Calling side's telephone number in the report.
Destination party's telephone number: displays the telephone number (CSI signal data) sent from the destination party's machine in the report.

**MEMO:**
Even if calling party's number is selected, when the call is not dialed by one-touch dialling or speed dialling, the telephone number (CSI data signal) sent by the other party's machine is displayed in the report.

[Bit 1]
Selects other party's abbreviation displayed in the report after transmission has ended.
Registration abbreviation: displays the other party's abbreviation entered in 1-touch dialling and coded speed dialling in the report.
Other party's machine's abbreviation: displays the abbreviation (NSF signal data) sent from the other party's machine in the report.

**MEMO:**
Even if "Registration abbreviation" is selected, when the other party's abbreviation is not entered in the Calling side's 1-touch or coded speed dialling, the abbreviation (NSF signal data) sent from the other party's machine is displayed in the report.

[Bit 3]
When "display" is selected, "06 message language" is displayed in the user mode's system settings.


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#1 SSSW-SW26: Transmission function settings

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 26 | 0 | Forced direct transmission function | Set | Do not set |
| | 1 | Reserved | | |
| | 2 | Reserved | | |
| | 3 | Reserved | | |
| | 4 | Reserved | | |
| | 5 | Reserved | | |
| | 6 | Destination at the time broadcast transmission is interrupted | One destination | All destinations |
| | 7 | Error report for time of transmission interruption | Do not output | Output |

**Table 13-517**

[Bit 0]
Selects whether or not to set the forced direct transmission function.
Set: All transmissions other than broadcast transmissions are sent directly.

[Bit 6]
Selects whether or not to interrupt communications to all destinations when broadcast transmission is interrupted.

[Bit 7]
Selects whether or not to output an error report when the stop key is pressed to interrupt transmission.

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#1 SSSW-SW28: V.8/V.34 protocol settings

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 28 | 0 | Calling side's V.8 protocol | No | Yes |
| | 1 | Called side's V.8 protocol | No | Yes |
| | 2 | Calling side's V.8 late start | No | Yes |
| | 3 | Called side's V.8 late start | No | Yes |
| | 4 | Fall back from V.34 receiving side | Prohibit | Do not prohibit |
| | 5 | Reserved | | |
| | 6 | Reserved | | |
| | 7 | Reserved | | |

**Table 13-518**

[Bit 0]
Selects whether or not to use V.8 protocol.
"No": Even when V.8 protocol is received from receiving side, V.8 protocol is disabled, protocol starts from V.21.

[Bit 1]
Selects whether or not to use V.8 protocol in reception.
"No": V.8 protocol is disabled. Starts from V.21 protocol.

[Bit 2]
Selects whether or not to use V.8 protocol when an ANSam signal cannot be recognized from the reception side and V.8 protocol is declared by the reception side in the DIS signal.
"Yes": sends a CI signal in response to the called side's DIS signal, then uses V.8 protocol.
"No": does not send a CI signal in response to the called side's DIS signal. Uses V.21 protocol.
When sending a manual transmission, V.8 late start is disabled regardless of this setting.

[Bit 3]
Selects whether or not to declare V.8 in the DIS signal when the ANSam signal can not be detected by the transmitting machine.
"Yes": declares V.8 protocol in the DIS signal. Uses V.8 protocol after a CI signal is sent by the transmitting machine.
"No": does not declare V.8 protocol in the DIS signal. Uses V.21 protocol.
When sending a manual transmission, V.8 late start is disabled regardless of this setting.

[Bit 4]
Selects whether or not to prohibit fall back from a V.34 reception machine.
Prohibit: Do not fall back from the receiving side.


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## 2. Menu switch settings (#2 MENU)

| No. | Function | Selection range |
|---|---|---|
| 005 | NL equalizer | ON/OFF |
| 006 | Telephone line monitor | DIAL/<br>SERVICEMAN<br>[1],[2]/OFF |
| 007 | Transmission level (ATT) | 8 to 15 |
| 008 | V.43 modulation speed upper limit | 2400 to 3429baud |
| 009 | V.34 data speed upper limit | 2.4 to 33.6Kbps |

**Table 13-519**

[Bit 005]
Selects NL equalizer ON/OFF.
Select NL equalizer ON when errors occur frequently due to telephone line conditions during communications.

**MEMO:**

Error codes for errors which occur during transmission due to telephone line conditions
##100, ##101, ##102, ##104, ##201, ##281 ##282, ##283, ##750, ##755, ##760, ##765, ##774, ##779, ##784, ##789
Error codes for errors which occur during reception due to telephone line conditions
##103, ##107, ##114, ##201, ##790, ##793

[Bit 006]
Selects telephone line monitor setting.

DIAL: telephone line monitoring sound is output from the speaker from initiation of communications until DIS signal.

SERVICEMAN [1]/[2]: telephone line monitoring sound is output from the speaker from initiation of communications until end of communications.

OFF: Monitor sound is not output.

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[Bit 007]
Sets the transmission level (ATT).
When errors occur frequently due to telephone line conditions during communications, raise the transmission level.

**MEMO:**

Error codes for errors which occur during transmission,due to telephone line conditions
##100, ##101, ##102, ##104, ##201, ##280, ##281 ##282, ##283, ## 284, ##750, ##752, ##754, ##755, ##757, ##759, ##760, ##762, ##764, ##765, ##767, ##769, ##770, ##772, ##774, ##775, ##777, ##779, ##780, ##782, ##784, ##785, ##787, ##789
Error codes for errors which occur during receiving, due to telephone line conditions
##103, ##106, ##107, ##201, ##793

[Bit 008]
Selects the modulation speed (baud rate) occurring in the V.34 primary channel.

[Bit 009]
Selects the data transmission speed upper limit occurring in the V.34 primary channel from the 2.4K-33.6Kbps range, at 2400bps intervals.


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### 3. Numeric settings by type (#3 NUMERIC Param.)

| No. | Function | Selection range |
|---|---|---|
| 002 | RTN signal transmission condition (1) | 1 to 99 (%) |
| 003 | RTN signal transmission condition (2) | 2 to 99 (times) |
| 004 | RTN signal transmission condition (3) | 1 to 99 (lines) |
| 005 | NCC pause time setting (before ID CODE) | 1 to 60 seconds |
| 006 | NCC pause time setting (after ID CODE) | 1 to 60 seconds |
| 009 | Compare number of digits in transmitter telephone number and receiver telephone number | 1 to 20 (digits) |
| 010 | T0 timer | 1 to 9999 (10ms) |
| 011 | T1 timer | 1 to 9999 (10ms) |
| 015 | Hooking detection interval | 1 to 999 ($\times$ 10ms) |
| 027 | V.21 low-speed/command preamble detection time | 15 $\times$ 25 ($\times$ 10ms) |

**Table 13-520**

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[No.02, 03, 04]
Sets RTN signal transmission conditions. When errors occur frequently in receiving due to RTN signal output errors, raise these parameters and ease the RTN signal transmission conditions.

**MEMO:**

Error codes for errors which occur in reception due to RTN signal output error: ##104, ##107, ##114, ##201

| | |
|---|---|
| RTN signal output condition (1) | : the proportion of number of error lines compared to the total number of lines per one page of received images. |
| RTN signal output condition (2) | : the burst error* reference value** |
| RTN signal output condition (3) | : the number of errors not meeting the burst error reference value |
| * burst error | : transmission error occurring over consecutive lines |
| ** Reference value | : When set to 15, this will recognize a burst error when a transmission error occurs for 15 consecutive lines. |

When one of these conditions are detected during receiving of an image signal, a RTN signal is sent out after the transmitting machine's procedure signal has been received. When these parameters are raised, the RTN signal becomes difficult to send out.

[No. 05]
Sets the pause time that is automatically entered between the access code and ID code when dialing on a NCC (New Common Carrier) line.

[No. 06]
Sets the pause time that is automatically entered between the ID code and other party's telephone number when dialing on a NCC (New Common Carrier) line.

[No. 09]
Selects the number of digits to compare when comparing telephone numbers entered into this machine's one-touch and speed dialing functions and the other party's TSI, when the designated telephone number is restricted by the memory box function, or direct mail prevention function setting.
Change this parameter before entering telephone numbers.


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[No. 10]
Sets the line connection identifier time. When errors occur frequently during communications due to telephone line conditions, raise this parameter.

**MEMO:**

"The waiting time from the end of transmission of the selection signal to detection of a significant signal at time of transmission" which was previously set by parameter 10 as T1 timer, has, by the recommendation of ITU-T, become T0 timer. Therefore for this machine, parameter 10 has been changed to T0 timer and the default time out interval has been changed from 35 seconds to 55 seconds.
Furthermore, the transmitting party's T1 timer (the waiting time from when CED, V21 flag or ANSam's significant signal is detected until the next significant signal is detected) is fixed at 35 seconds.

[No. 11]
Sets the receiver's T1 timer (the waiting time from the start of DIS transmission to the receipt of a significant signal).
When errors occur frequently during receiving due to telephone line connection conditions, raise this parameter.

[No. 13]
Sets the maximum time allowed for receiving per one line of image data when receiving image data. When the image data receiving time per line is long, increase this parameter's setting and increase the maximum time allowed for receiving.

[No. 15]
Sets hooking detection time. When changing the hooking timing, adjust this parameter. When it is set to 50, it recognizes hooking longer than 500ms as being "on hook".

[No. 27]
Use it to change the period of time spent to detect the header flag of a V.21 low-speed command. Decrease it so that it is as close to 15 (150ms) as possible if detection fails because of such effects (as echoes as when communicating with an overseas party). On the other hand, increase it so that it is as close to 25 (250ms) as possible is a tone signal or the like is wrongly identified as the header flag of a low-speed command.

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## 4. Special settings (#4A SPECIAL)

#4A SPECIAL-SW01: Data encoding methods/Canon original abbreviated protocol settings

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 01 | 0 | MR, MMR encoding methods | Prohibit | Do not prohibit |
| | 1 | MMR encoding method | Prohibit | Do not prohibit |
| | 2 | Hyper control | No | Yes |
| | 3 | Setting prohibited | | |
| | 4 | Setting prohibited | | |
| | 5 | Setting prohibited | | |
| | 6 | Setting prohibited | | |
| | 7 | Setting prohibited | | |

**Table 13-521**

[Bit 0]
Sets the data encoding method for communication. When “prohibit” is selected, encoding is limited to MH encoding.

[Bit 1]
Sets the data encoding method for communication. When “prohibit” is selected, encoding is limited to MH or MR encoding. When faulty images result from MMR encoding, select “prohibit.” This bit is effective when Bit 0 is set to “do not prohibit.”

**MEMO:**

The encoding methods are as shown below, depending on the combination of Bit 0 and Bit 1 settings.

| Bit1 | Bit0 | Selected encoding method |
|---|---|---|
| 0 | 0 | MMR, MR or MH |
| 0 | 1 | MR or MH |
| 1 | 0 | MH |
| 1 | 1 | MH |

**Table 13-522**

[Bit 2]
Selects whether or not to perform hyper control at time of communications.


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#4A SPECIAL-SW04: Completion tone settings

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 04 | 0 | Setting prohibited | | |
| | 1 | Completion tone when receiving from memory | Ring | Do not ring |
| | 2 | Receiving print completion tone | Ring | Do not ring |
| | 3 | Setting prohibited | | |
| | 4 | Setting prohibited | | |
| | 5 | Setting prohibited | | |
| | 6 | Setting prohibited | | |
| | 7 | Setting prohibited | | |

**Table 13-523**

[Bit 1]
Sets whether or not to ring the completion tone when receiving is finished when receiving from memory.

[Bit 2]
Sets whether or not to ring the completion tone when received image printing is finished.

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### 5. Country type setting (#5 TYPE)

When country type setting is performed, the standard values for each item's parameters in #1 SSSW to #4 NCU are entered at one time.

### 6. Document scanning function setting ( #6 SCANNER)

When this item's setting is changed, the quality of scanned images may deteriorate. Do not change this setting other than to adjust "8 CCD" when adjusting image positioning.


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## 7. Printer parameter settings (#7 PRINTER)

a. #1 SSSW setting
#7 PRINTER- #1 SSSW-SW05 (reduction, cassette selection setting)

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 05 | 0 | Priority on LTR | Yes | No |
| | 1 | Priority on LGL | Yes | No |
| | 2 | Report output when report paper has run out | Do not output | Cassette output from other than the specified cassette |
| | 3 | Reserved | | |
| | 4 | Reserved | No | Yes |
| | 5 | Reduction and printing on LTR | | |
| | 6 | Cassette when report cassette is specified | Set | Do not set |
| | 7 | Sub-scanning priority record | Set | Do not set |

**Table 13-524**

[Bit 0]
Use it to specify whether to give priority to LTRR over LTRR or LGL when data which may be printed on either by division is received

[Bit 1]
Use it to specify whether to give priority to LGL over A4R or LTRR when data which may be printed on either by division is received
The order of priority will be as follows according to the bit 0 and 1 settings:

| Bit 1 | Bit 0 | Order of priority |
|---|---|---|
| 0 | 0 | A4R → LTRR → LGL |
| 0 | 1 | LTRR → A4R → LGL |
| 1 | 0 | LGL → LTRR → A4R |
| 1 | 1 | LTRR → LGL → A4R |

If sub scanning is given priority, the order will be LTRR → A4R → LGL even when bit 1 and 0 are set to 0.

[Bit 2]
Selects whether or not to output a report in a cassette other than the one selected when a cassette is specified for report output by user data but there is no paper in the specified cassette.

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[Bit 5]
Use it to specify whether to reduce and print on LTRR paper.
If printing on non-LTRR paper without reduction is desired for a long-size page, be sure to select “No.”

[Bit 6]
When a report cassette has been specified, a report can only be output from the specified cassette.

[Bit 7]
Selects whether or not to set sub-scanning priority record.
“Set”: When B4 and A4R size paper are set and an A4 length* image is received, use B4 paper to print.
“Do not set”: When B5 horizontal and A4R paper are set and a B4 sized image is received, divide the image to B5 horizontal paper size and print.
* An image whose length is less than B4 size, an image which cannot be reduced and printed on A4R paper.


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#7 PRINTER-#1 SSSW-SW06 (reduction setting)

| SW No. | Bit No. | Function | Bit setting | |
|---|---|---|---|---|
| | | | 1 | 0 |
| 06 | 0 | Reduction when image is divided | Prohibit | Do not prohibit |
| | 1 | Reserved | | |
| | 2 | Reserved | | |
| | 3 | Reserved | | |
| | 4 | Reserved | | |
| | 5 | Reserved | | |
| | 6 | Reserved | | |
| | 7 | Reserved | | |

**Table 13-525**

[Bit 0]
Selects whether or not to reduce the received image when it is possible to make a divided print when the length of the document received has been reduced to the maximum reduction rate (70%).

Prohibit: Divide the document and print on the following page. (original size)
For example, when a document the length of 2.5 A4R pages is received, the document will be divided onto three A4R pages and printed. At that time, the image will be output at the original size.

Do not prohibit: Reduce the image and print within the page when a divided print is made.
For example, when a document the length of 2.5 A4R pages is received, the image is reduced 70% and the document is printed out on two A4R size pages.

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b. #2 NUMERIC Param. (Numeric parameter settings)

| No. | Function | Selection range |
|---|---|---|
| 01 | Deletion range of printed image when a long length image is received | 0 to 9999 |
| 04 | Leading edge margin | 0 to 9999 |
| 05 | Trailing edge margin 1 | 0 to 9999 |
| 14 | Trailing edge margin 2 | 0 to 9999 |

**Table 13-526**

[No. 1]
Sets the deleted image range when a long length image is received.
When you wish to keep the received image's trailing edge even when receiving images of a length that is over the effective record length, lower this parameter and reduce the deletion range.

**MEMO:**

When a document whose length exceeds the effective recording length is received, if the image length is within a range of 14 mm* of the effective recording length, this range will be deleted and the image printed. When the image length is more the 14mm beyond the effective recording length, the received image will be reduced to a maximum of 75%** and printed on one page. However, when the document exceeds the effective recording length even after reduction, the image will not be reduced, but will be divided and printed.
* Initial setting value
** When the user mode's image reduction mode is set to automatic.

[No. 4]
Sets the effective recording length's leading edge margin.

[No. 5]
Sets the effective recording length's trailing edge margin.

[No. 14]
Sets the trailing edge margin. The length of the margin changes according to the paper length.
A5 Setting value × (148.5/297)
A3 Setting value × (420/297)
A4R Setting value × (297/210)
The combined value of Bit 5 and Bit 14's settings become the trailing edge margin.

c. #3 PRINT COUNT
Displays the number of pages printed.

d. #4 PRINT RESET
Resets the printer.


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## 8. Initialization of setting values (#8 CLEAR)

Selecting the setting items below initializes the data by each item..
Clearing setting items and numeric for the parameters will set the items to values set at factory shipping.

| Item | Data that are initialized |
|---|---|
| TEL | Data entered by TEL Entry. One-touch dial, speed dial, group dial entries. Data in user data memory management. |
| USER SW | Data entered in user data and in SSSW#1-#3. Data in the user data memory management will not be cleared. Accumulated image data in the memory are cleared. |
| SERVICE SW | User data and data in SSSW#1-#3, #6, #7 |
| NCU | SSSW#4 data |
| SERVICE DATA | System dump list data |
| COUNTER | Number of pages read/activity management numbers |
| REPORT | Activity management report data |
| ALL | All setting and registration data |

**Table 13-527**

**Warning:**
When replacing the image processor PCB, check the counter before replacing. Input the counter value after replacing.

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Control memory data are deleted or initialized according to the items listed below by using Service Mode #8 CLEAR.

Before performing this procedure, be sure to print a backup data list.

| Operation name | Contents |
|---|---|
| TEL | Data entered in User data 2. TEL # REGISTRATION |
| USER SW | Data that are entered in User data 1. DATA REGISTRATION and data entered in Service mode settings #1-#3. However, the data in the FILE SETTINGS of User data 1. DATA REGISTRATION are not deleted or initialized. |
| SERVICE SW | User data, data in service mode items #6, #7 |
| NCU | Data in service mode settings #4A, #4B |
| ISDN | Data in service mode setting #4C |
| SERVICE DATA | Management data system dump list data |
| REPORT | Management data activity management report data |
| COUNTER | Print counter data from management data system dump |
| ALL | All user data, service mode setting items, management data and image data except service mode setting #5 and the print counter from management data system dump |

**Table 13-528**

### 9. ROM information display (#9 ROM)

Shows the image processor PCB's ROM DIMM management information (version no., checksum, etc.) on the display.

### 10. CS SET (mirror mount initialization setting)

When this item is set, the mirror mount moves to the position set when shipped.


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# F. Test Mode (TEST MODE)

## 1. Overview

The test mode runs according to the menu items shown on the display.
The test mode items are divided into 8 blocks.

D-RAM test <1:DRAM>
Checks if data reading and writing to the D-RAM is operating normally.

CCD test <2: CCD TEST>
Used when correcting the variations in sensitivity of the CCD's photosensitive cells.

PRINT test <3:PRINT>
Prints 8 patterns within the printing area.

MODEM NCU test <4:MODEM NCU>
Performs relay operations test, modem DTMF, tonal signal transmission and receiving tests.

AGING test <5:AGING TEST>
Illuminates the scanning lamp and drives the ADF document transport motor in fine mode. The printer continuously prints a diagonal line pattern in fine mode and characters in normal density.

FACULTY test <6:FACULTY TEST>
Used when checking operations of the microswitcher, sensor, speaker and ADF functions.

DATA SET <7:DATA SET>
Do not touch. This mode is for factory use only.

BOOK test <8:BOOK TEST>
Operates at the speed for the scanning transmission image quality LED.

**Warning:**

Do not use the DATA SET mode. If you enter the DATA SET mode, the registration data will be changed automatically.

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## 2. Test Mode menu

To operate the test mode, press the enter/set key then the # key and select the SERVICE MODE. Then use the up/down shift keys to select TEST MODE and depress the set key.

After finishing the TEST MODE, press the stop key, then the clear key.

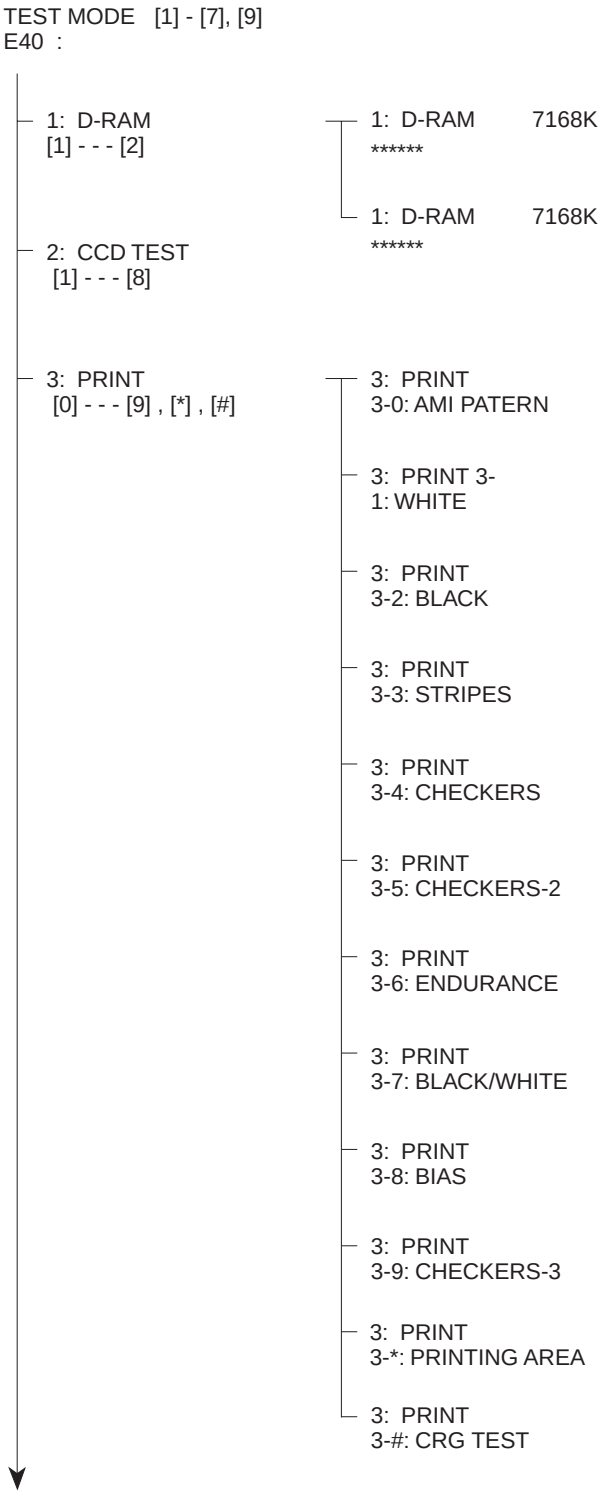


**Figure 13-509**


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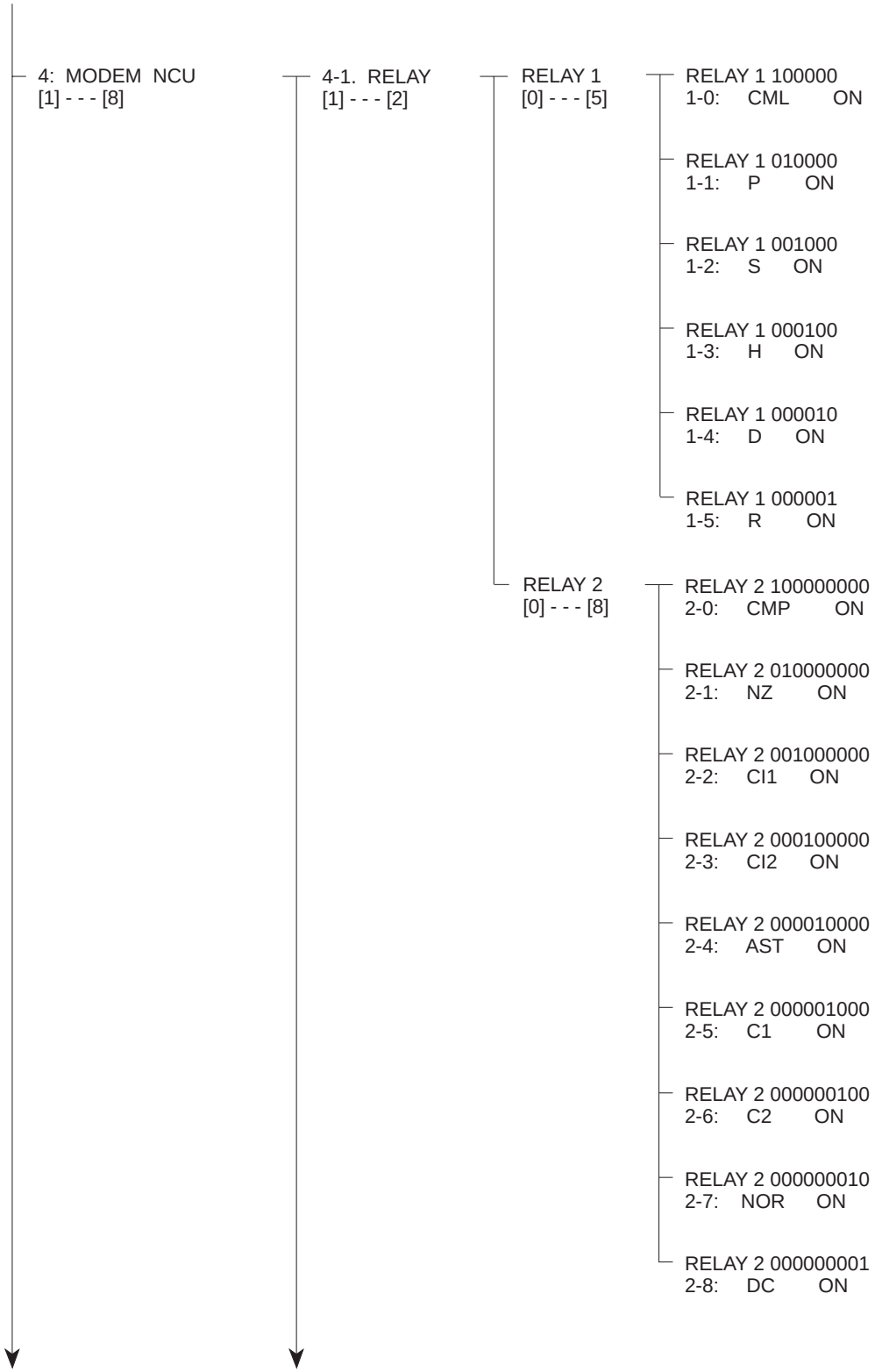


**Figure 13-510**

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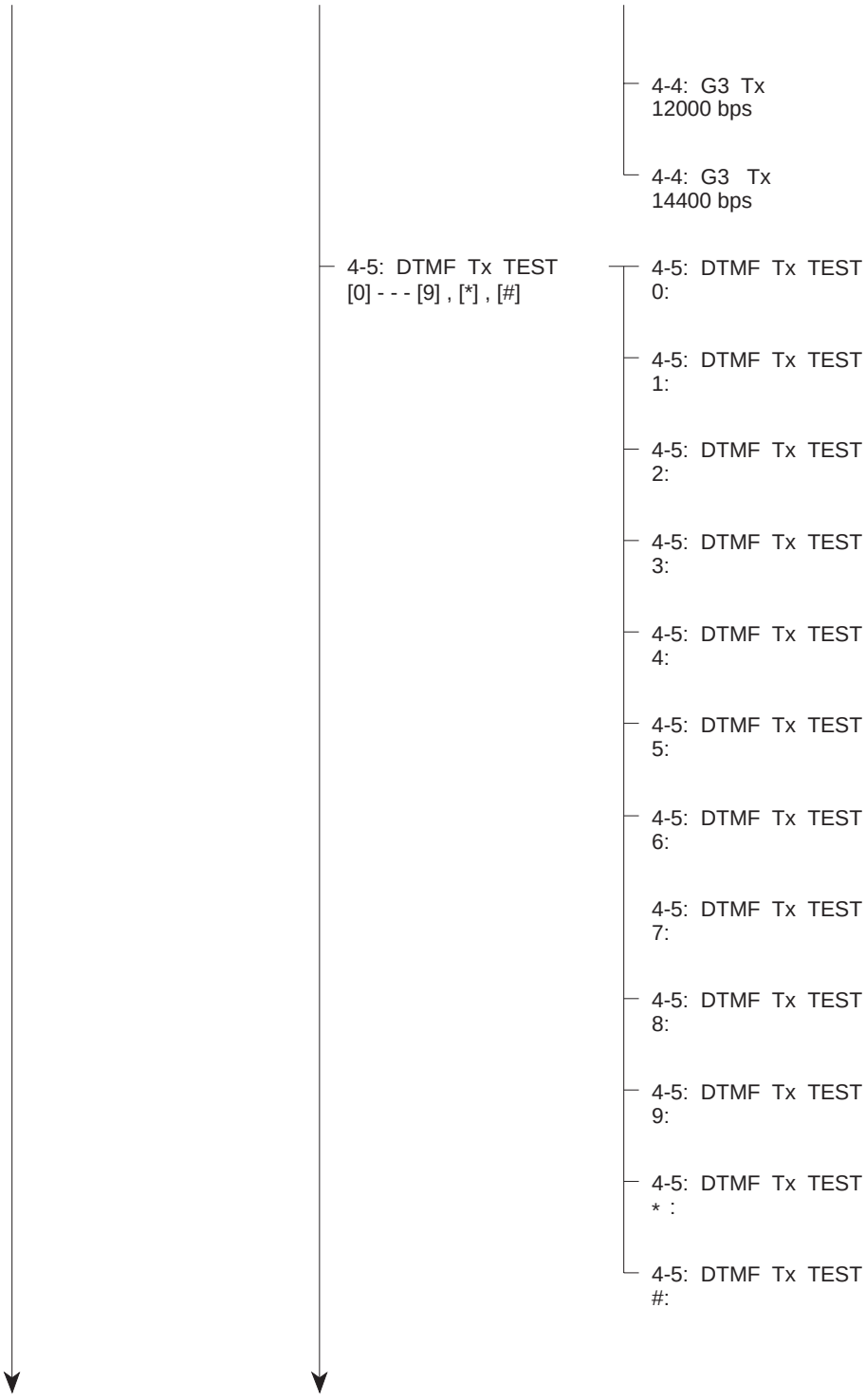


**Figure 13-511**


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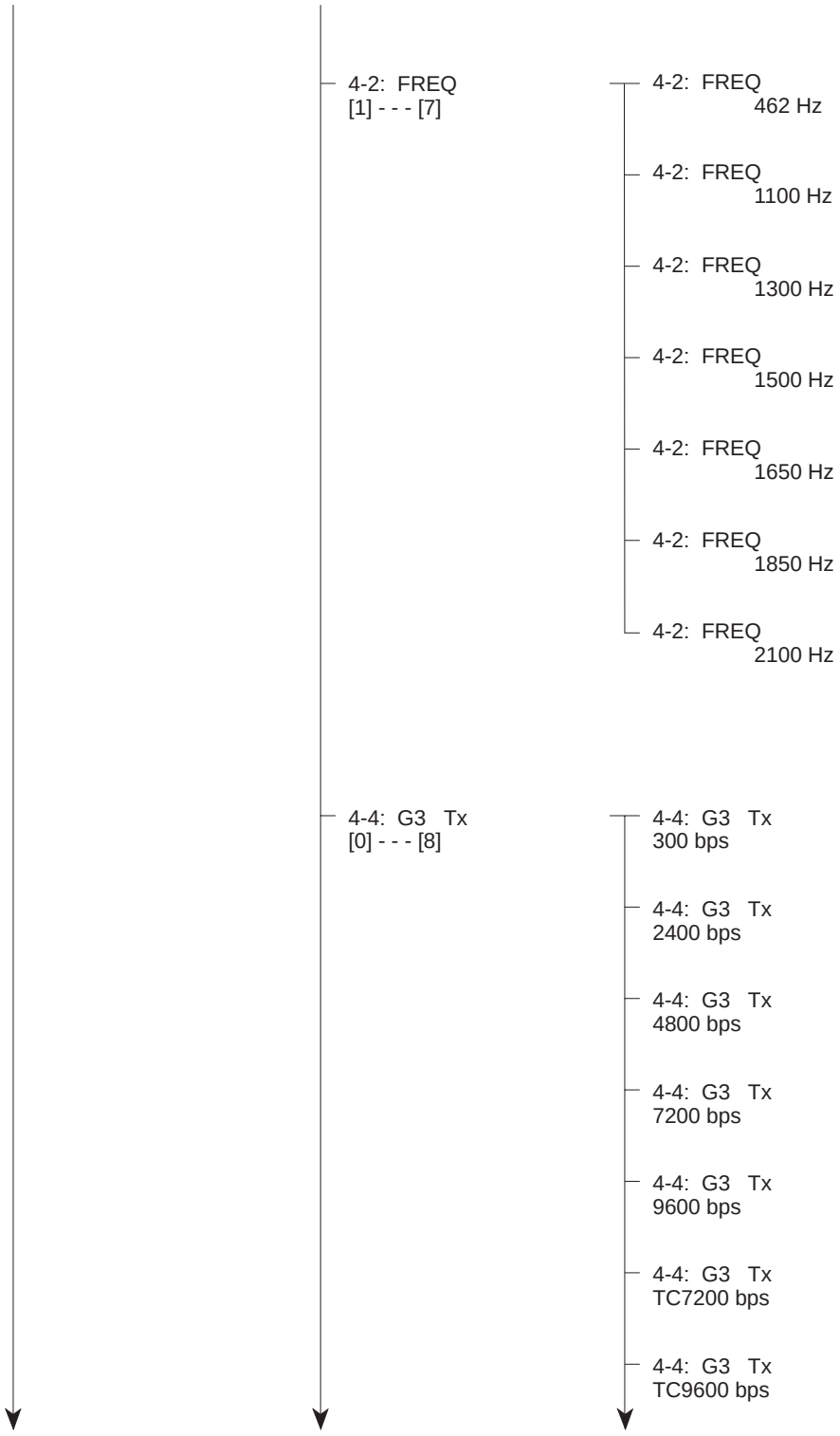


**Figure 13-512**

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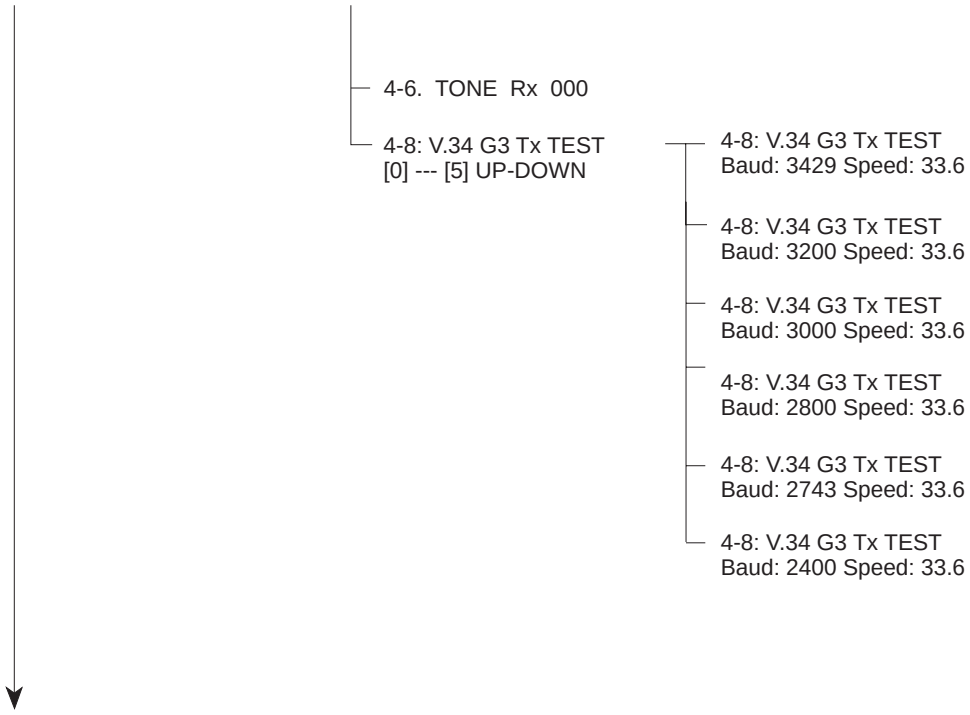
4-6. TONE Rx 000
4-8: V.34 G3 Tx TEST
[0] --- [5] UP-DOWN
4-8: V.34 G3 Tx TEST
Baud: 3429 Speed: 33.6
4-8: V.34 G3 Tx TEST
Baud: 3200 Speed: 33.6
4-8: V.34 G3 Tx TEST
Baud: 3000 Speed: 33.6
4-8: V.34 G3 Tx TEST
Baud: 2800 Speed: 33.6
4-8: V.34 G3 Tx TEST
Baud: 2743 Speed: 33.6
4-8: V.34 G3 Tx TEST
Baud: 2400 Speed: 33.6

**Figure 13-513**


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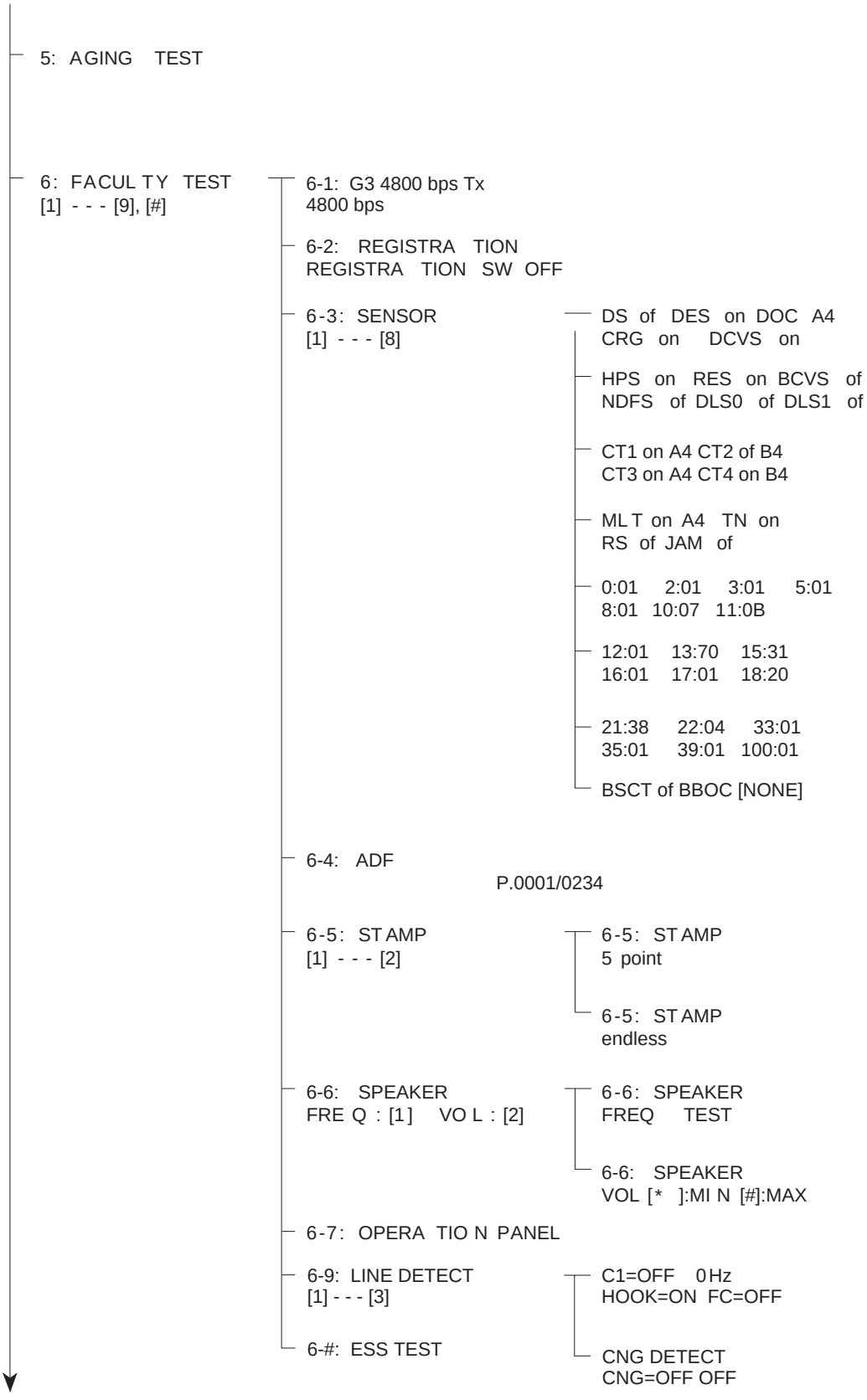


**Figure 13-514**

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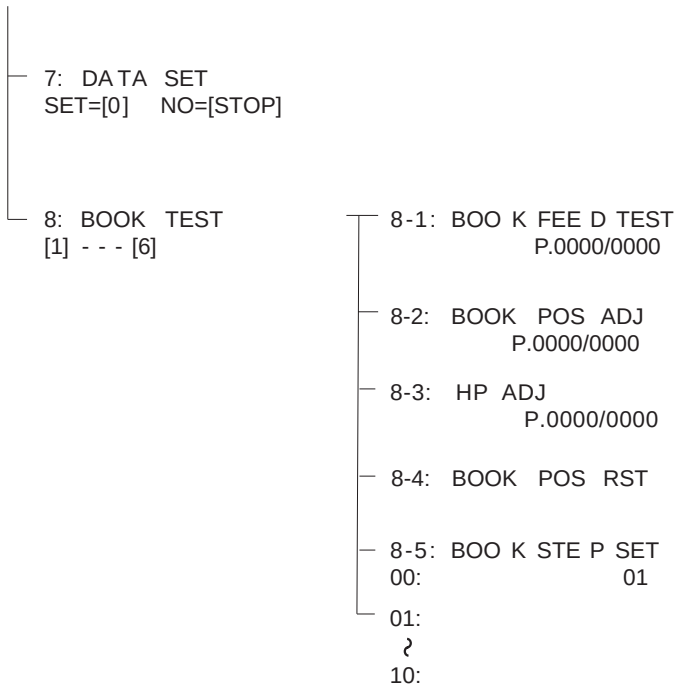


**Figure 13-515**


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### 3. D-RAM test <1: DRAM>

Performs a write/read check on data in all areas of the D-RAM. When 8MB expansion memory has been installed, also checks the expansion memory area.

When an error occurs during checking, the test will be aborted and an error message will be indicated on the display.

**Caution:**

When a D-RAM test is performed, the image data saved in the image memory are cleared. Therefore, output the images before performing the test when there are saved images.

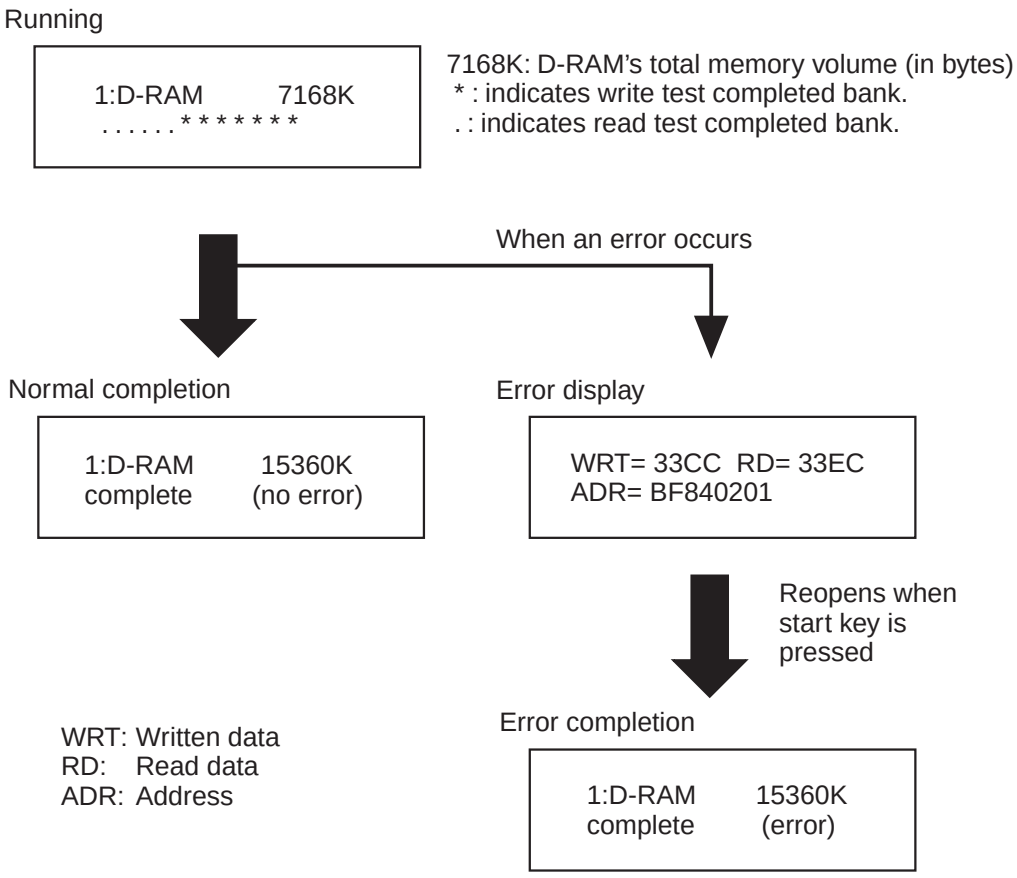


**Figure 13-516**

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### 4. CCD test <2: CCD TEST>

When you press 2 on the numeric key pad in the TEST MODE menu, the CCD TEST is selected. When 8 on the numeric key pad is pressed during the running of this test, shading adjustment is performed.

(See page 13-9.)

### 5. PRINT test <3: PRINT>

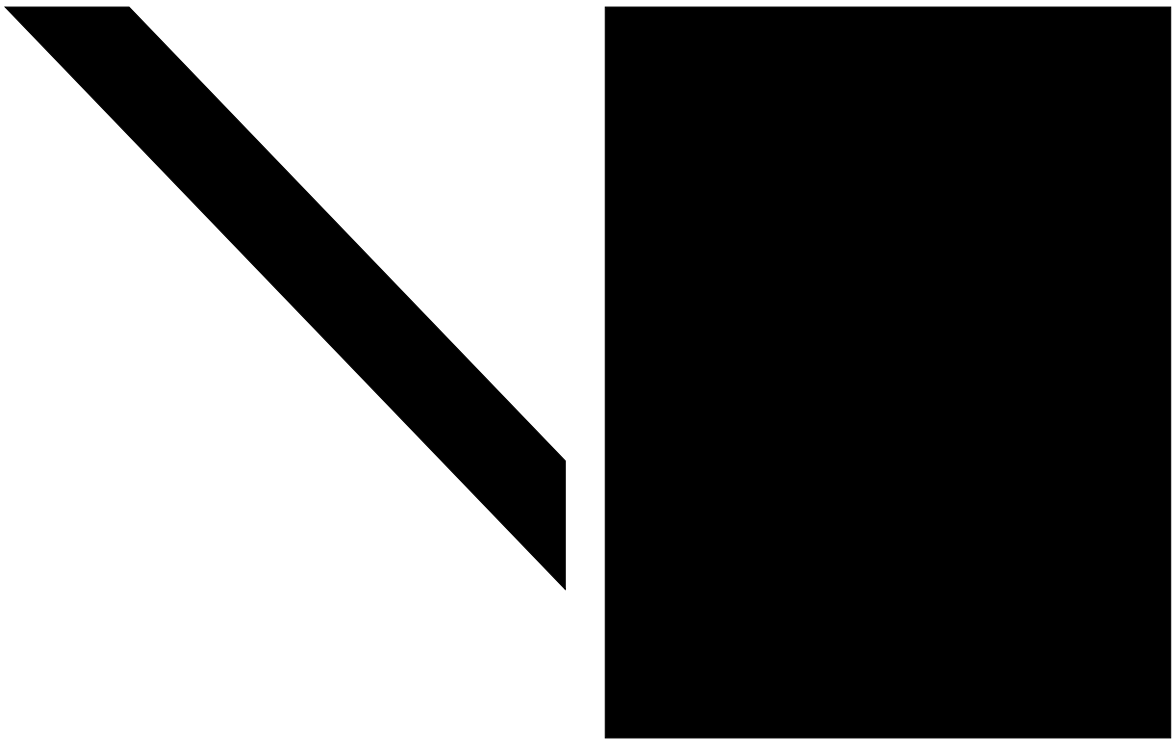
a) Test pattern printing mode

When you press 3 on the numeric key pad, the PRINT TEST is selected.

There are two service-use print patterns. They are shown below. Do not use the other print patterns, as they are for factory and development use.

- 3-2: BLACK: output when 2 on the numeric key pad is pressed.
- 3-6: ENDURANCE: output when 6 on the numeric key pad is pressed.

To cancel the test print, press the stop key.



Check the print pattern to make sure there is no image reduction, stretching, soiling or black stripes.

Check the print pattern to make sure there are no white stripes or unevenness.

**Figure 13-517**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**Remarks:**

When the test print switch (SW401) on the sensor PCB is pressed, the print patterns shown below are output.

By outputting these test prints, you can conduct a print check with the scanning assembly Operation panel assembly installed.

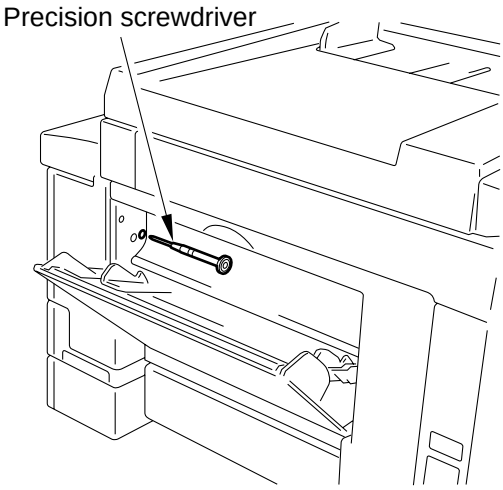
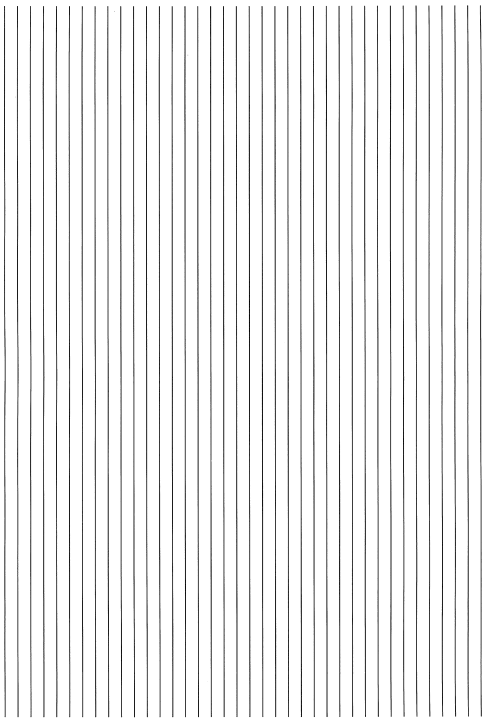



**Figure 13-518**



Print pattern

**Figure 13-519**

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## 5. MODEM NCU test <4: MODEM NCU>

Runs transmission and reception tests for the MODEM and NCU. For the modem test, checks whether the modem's transmission signal is being properly transmitted by checking the signal sound from the speaker. Also checks whether the received tonal signal and DTMF signal were properly detected by the modem. The test ends when the stop key is pressed.

| Type | Outline |
|---|---|
| Relay test<br>key pad. | Turn the selected relay on and off using the numeric |
| Frequency test | Output the tonal signal from the modem through the telephone line connection terminal and the speaker. |
| G3 signal transmission test | Output the G3 signal from the modem through the telephone line connection terminal and the speaker. |
| DTMF signal reception test | Output the DTMF signal from the modem through the telephone line connection terminal and the speaker. |
| Tonal signal reception test | Put the specific frequency received from the telephone line connection terminal and the DTMF signal through the modem and display whether or not they are detected. The received signal is output from the speaker. |
| V.34 G3 signal transmission test | Output the V.34G3 signal from the modem through the telephone line connection terminal and the speaker. |

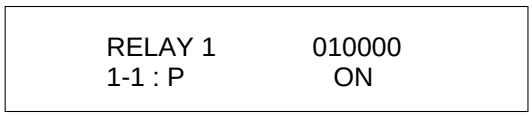
a) Relay test

When 1 on the numeric key pad in the MODEM NCU TEST menu is pressed, the relay test is selected.

The NCU relays are operated by the numeric key pad.

**Caution:**

ON/OFF on the display indicator is displayed for the relay operation signal transmission by operation of the numeric key pad. Therefore, it is not possible the verify that a single relay unit is damaged by looking at the display.




1: RELAY ON
2: RELAY OFF

| | 0 | 1 | 0 | 0 | 0 | 0 |
|---|---|---|---|---|---|---|
| RELAY | CML | P | S | H | D | R |
| Numeric key | 0 | 1 | 2 | 3 | 4 | 5 |

**Figure 13-520**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b) Frequency test

When 2 on the numeric key pad in the MODEM NCU TEST menu is pressed, the frequency test is selected.

This test uses the telephone line connection terminal and the speaker to output the frequency signals shown below from the modem. Changes in frequency are made using the numeric key pad.

| Numeric key pad | Frequency |
|---|---|
| 1 | 462Hz |
| 2 | 1100Hz |
| 3 | 1300Hz |
| 4 | 1500Hz |
| 5 | 1650Hz |
| 6 | 1850Hz |
| 7 | 2100Hz |

**Remarks:**

Frequency and each frequency's output level conform to the service mode's output level setting.

c) G3 signal transmission test

When 4 on the numeric key pad in the MODEM NCU TEST menu is pressed, the G3 signal transmission test is selected. This test uses the telephone line connection terminal and the speaker to output the G3 signals shown below from the modem. Change the output speed using the numeric key pad and then check the signals.

| Numeric key pad | Output speed |
|---|---|
| 0 | 300bps |
| 1 | 2400bps |
| 2 | 4800bps |
| 3 | 7200bps |
| 4 | 9600bps |
| 5 | TC7200bps |
| 6 | TC9600bps |
| 7 | 12000bps |
| 8 | 14400bps |

**Remarks:**

The output level of each signal conforms to the service mode settings.

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d) DTMF signal output test

When 5 on the numeric key pad in the MODEM NCU TEST menu is pressed, the DTMF signal transmission test is selected. This test uses the telephone line connection terminal and the speaker to output the DTMF signals from the modem shown below. The DTMF signal corresponds to the key pressed on the numeric key pad.

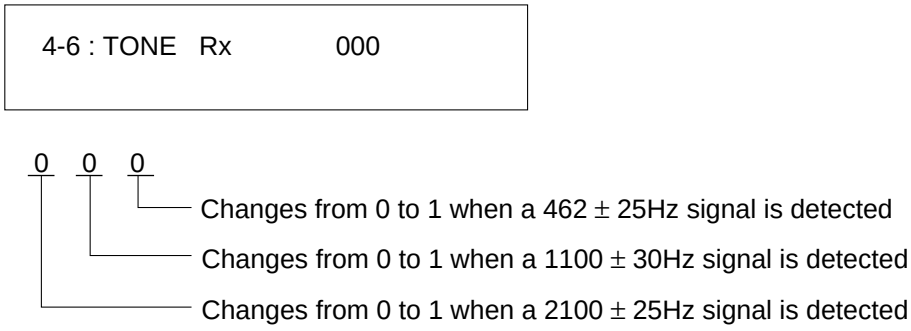
**Remarks:**

The output level of each signal conforms to the service mode settings.

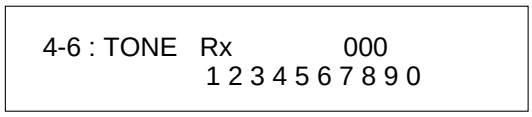
e) Tonal, DTMF signal reception test

When 6 on the numeric key pad in the MODEM NCU TEST menu is pressed, the tonal signal and DTMF signal reception 0 test is selected. This test checks whether the tonal signal and DTMF signal received from the telephone line connection terminal was detected.

Tonal signal reception test


4-6 : TONE Rx 000
0 0 0
Changes from 0 to 1 when a 462 ± 25Hz signal is detected
Changes from 0 to 1 when a 1100 ± 30Hz signal is detected
Changes from 0 to 1 when a 2100 ± 25Hz signal is detected

Tonal signal reception test




The DTMF signals received on the display's second line are displayed in order from the right.

**Figure 13-521**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f) V.34 G3 signal transmission test

When 8 on the numeric key pad in the MODEM NCU TEST menu is pressed, the v.34 G3 transmission test is selected. In this test, when the start key is pressed, the V.24 G3 transmission signal from the modem, shown below, is output using the telephone line connection terminal and the speaker. The modulation rate (baud rate) is changed using the numeric key pad and the output speed is changed using the shift keys (up and down arrows?).

| Numeric key pad | Modulation rate |
|---|---|
| 0 | 3429baud |
| 1 | 3200baud |
| 2 | 3000baud |
| 3 | 2800baud |
| 4 | 2743baud |
| 5 | 2400baud |

| Shift key | Output speed |
|---|---|
| | 2400bps |
| | 4800bps |
| | 7200bps |
| | 9600bps |
| ▲ | 12000bps |
| | 14400bps |
| | 16800bps |
| | 19200bps |
| | 21600bps |
| ▼ | 24000bps |
| | 26400bps |
| | 28800bps |
| | 31200bps |
| | 33600bps |



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## 6. AGING test <5: AGING TEST>

When 5 on the numeric key pad in the TEST MODE menu is pressed, the AGING TEST is selected.

This test illuminates the scanning lamp and drives the ADF's document feed motor at the speed used for fine mode. Also, the printer prints out a vertical stripe pattern in fine mode.

The AGING TEST stops when the stop key is pressed.

## 7. FACULTY test <6: FACULTY TEST>

When 6 on the numeric key pad in the TEST MODE menu is pressed, the FACULTY TEST is selected.

This test tests the following functions.

a) G3 signal transmission test: Outputs a 4800bps G3 signal to the telephone line and speaker.
b) Slide switch test: Tests operation of the Operation panel's slide switches.
c) Sensor test: Tests operation of each sensor.
d) ADF test: Tests ADF operation
e) Stamp test: Completion stamp operation test
f) Speaker test: Speaker operation test
g) Operation panel test: Operation panel key operation test
h) Line signal reception test: NCU board's signal sensor and frequency counter operation test
i) ESS test: ESS (energy saver function) operation verification test

a) G3 signal transmission test <6-1: G3 4800 bps Tx>

When 1 on the numeric key pad in the FACULTY TEST menu is pressed, the G3 signal transmission test is selected.

This test outputs a 4800bps G3 signal to the telephone line connection terminal and the speaker.

b) Slide switch test <6-2: REGISTRATION>

When 2 on the numeric key pad in the FACULTY TEST menu is pressed, the slide switch test is selected.

When the slide switches on the Operation panel are turned on and off, ON and OFF are displayed on the display.

The slide switches are shown as REGISTRATION SW on the display.


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c) Sensor test <6-3: SENSOR>

c-1) Sensor test

This is a mode which uses the display to check the condition of this machine's sensors.

When 3 on the numeric key pad is pressed in the FACULTY TEST menu, the sensor test is selected.

The display indicator indicates when the sensor being tested is turned on and off.

Also, the LBP status is shown on the display to check printer error information.

Refer to page 13-12 for details concerning the sensor test.

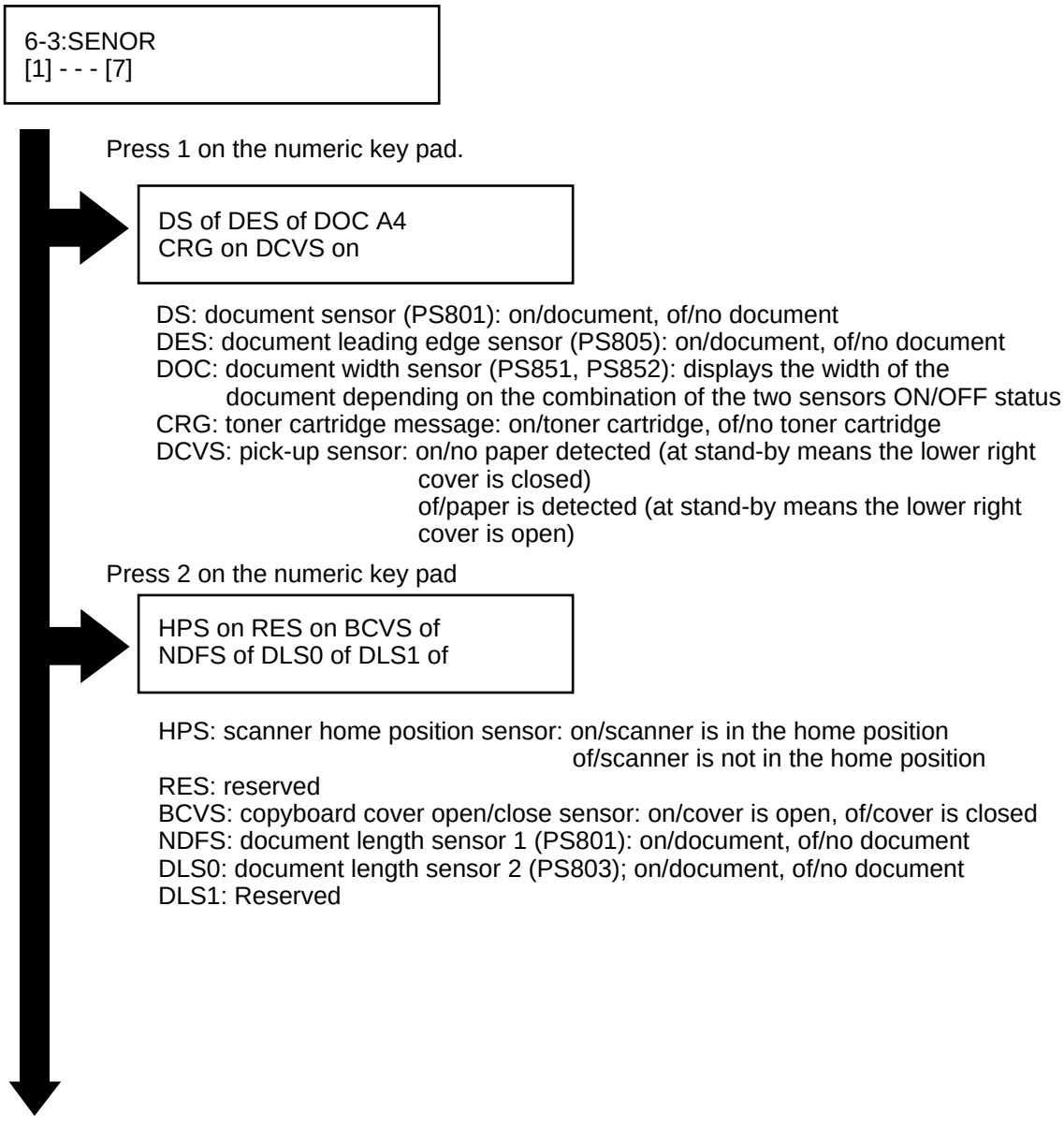
6-3:SENOR
[1] - - - [7]
Press 1 on the numeric key pad.
DS of DES of DOC A4
CRG on DCVS on
DS: document sensor (PS801): on/document, of/no document
DES: document leading edge sensor (PS805): on/document, of/no document
DOC: document width sensor (PS851, PS852): displays the width of the document depending on the combination of the two sensors ON/OFF status
CRG: toner cartridge message: on/toner cartridge, of/no toner cartridge
DCVS: pick-up sensor: on/no paper detected (at stand-by means the lower right cover is closed)
of/paper is detected (at stand-by means the lower right cover is open)
Press 2 on the numeric key pad
HPS on RES on BCVS of
NDFS of DLS0 of DLS1 of
HPS: scanner home position sensor: on/scanner is in the home position
of/scanner is not in the home position
RES: reserved
BCVS: copyboard cover open/close sensor: on/cover is open, of/cover is closed
NDFS: document length sensor 1 (PS801): on/document, of/no document
DLS0: document length sensor 2 (PS803); on/document, of/no document
DLS1: Reserved

**Figure 13-522**

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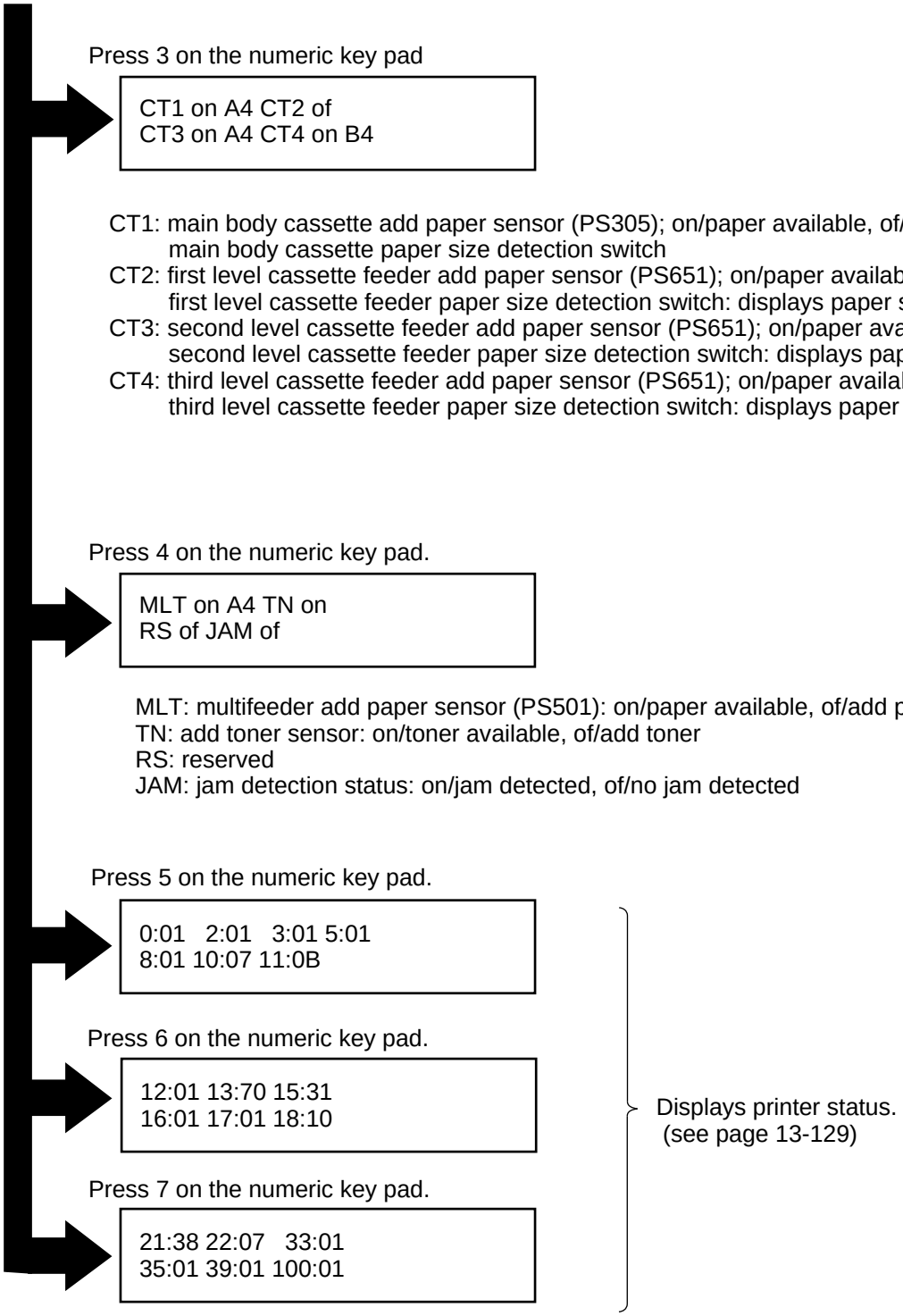
Press 3 on the numeric key pad
CT1 on A4 CT2 of
CT3 on A4 CT4 on B4
CT1: main body cassette add paper sensor (PS305); on/paper available, of/add paper
main body cassette paper size detection switch
CT2: first level cassette feeder add paper sensor (PS651); on/paper available, of/add paper
first level cassette feeder paper size detection switch: displays paper size
CT3: second level cassette feeder add paper sensor (PS651); on/paper available, of/add paper
second level cassette feeder paper size detection switch: displays paper size
CT4: third level cassette feeder add paper sensor (PS651); on/paper available, of/add paper
third level cassette feeder paper size detection switch: displays paper size
Press 4 on the numeric key pad.
MLT on A4 TN on
RS of JAM of
MLT: multifeeder add paper sensor (PS501): on/paper available, of/add paper
TN: add toner sensor: on/toner available, of/add toner
RS: reserved
JAM: jam detection status: on/jam detected, of/no jam detected
Press 5 on the numeric key pad.
0:01 2:01 3:01 5:01
8:01 10:07 11:0B
Press 6 on the numeric key pad.
12:01 13:70 15:31
16:01 17:01 18:10
Press 7 on the numeric key pad.
21:38 22:07 33:01
35:01 39:01 100:01
Displays printer status.
(see page 13-129)

**Figure 13-523**


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c-2) Printer status

This mode is used to identify the area which is out of order when a printer malfunction indicator is displayed.

To display the status, press 5,6,7 on the numeric key pad when the sensor test screen displays shown below are displayed. An example of the screen display is shown below and the meaning of the display is described.

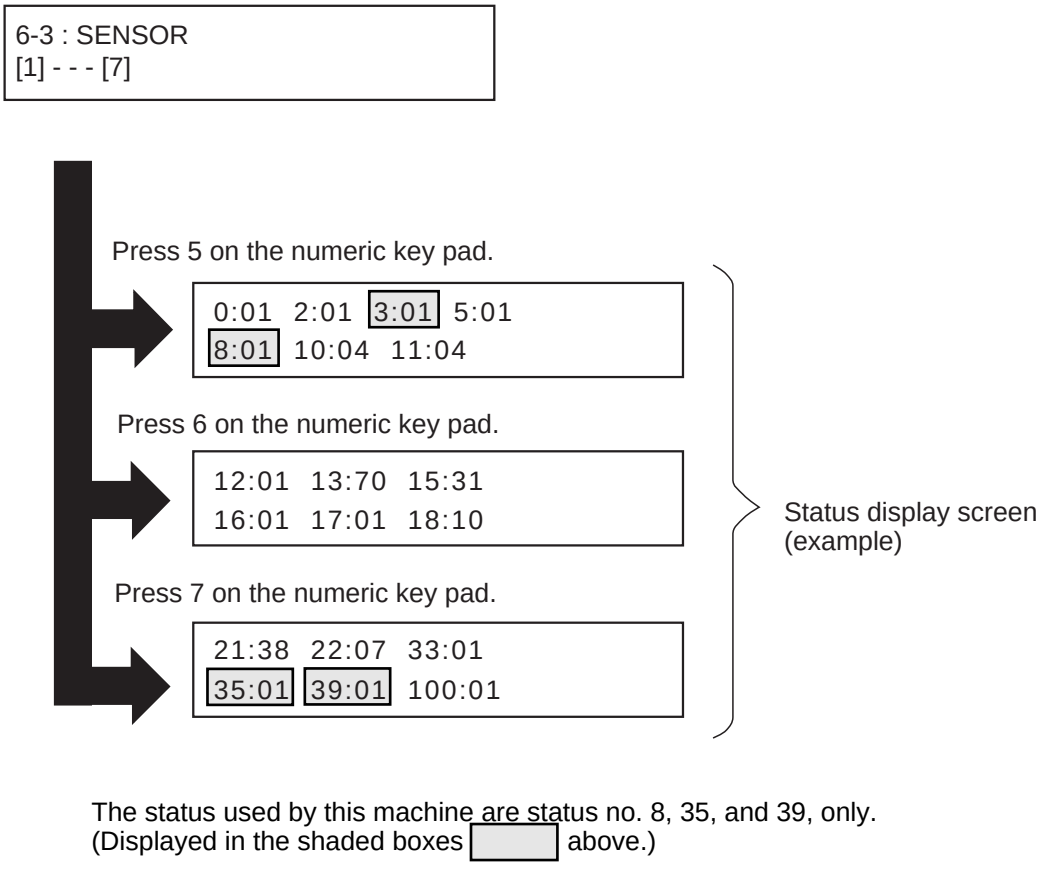
6-3 : SENSOR
[1] - - - [7]
Press 5 on the numeric key pad.
0:01 2:01 3:01 5:01
8:01 10:04 11:04
Press 6 on the numeric key pad.
12:01 13:70 15:31
16:01 17:01 18:10
Press 7 on the numeric key pad.
21:38 22:07 33:01
35:01 39:01 100:01
Status display screen (example)
The status used by this machine are status no. 8, 35, and 39, only.
(Displayed in the shaded boxes above.)

**Figure 13-524**



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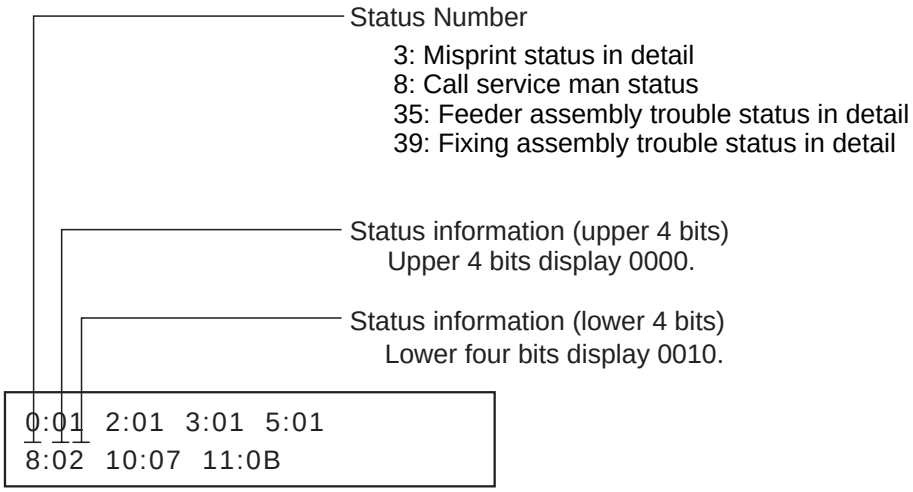
## How to read the printer status screen

Printer status is displayed as a hexadecimal number.

This is converted to a binary number and then the area which is out of order is detected.

Below is an explanation of how to read the screen.


Status Number
3: Misprint status in detail
8: Call service man status
35: Feeder assembly trouble status in detail
39: Fixing assembly trouble status in detail
Status information (upper 4 bits)
Upper 4 bits display 0000.
Status information (lower 4 bits)
Lower four bits display 0010.
0:01 2:01 3:01 5:01
8:02 10:07 11:0B

When status 8's status information (upper four bits) displays 0 and (lower 4 bits) 2, as shown above, if the bit pattern is fixed according to the conversion chart below, at 0000 0010, bit 1 becomes 1.
Status 8's bit 1 is a status which indicates a fixing assembly problem, and indicates the cause of the printer's poor condition is the fixing assembly.

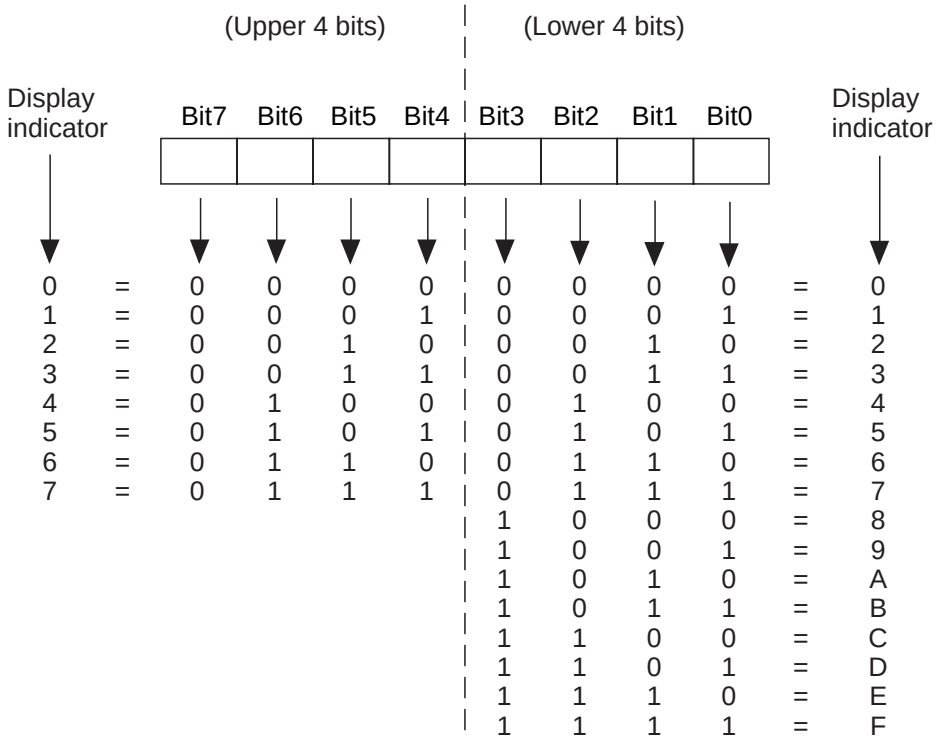



**Figure 13-525**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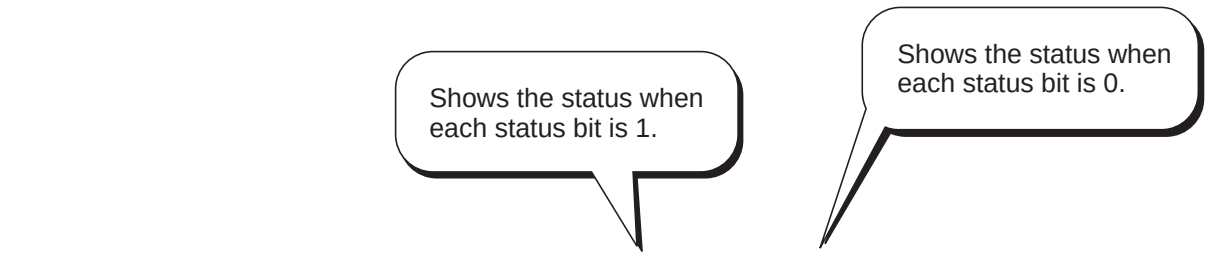
Printer status information list

The details of each status number (3,8,25,29) are displayed in charts from the next page. Read the charts as shown below.




| Bit | Meaning | 1 | 0 |
|---|---|---|---|
| 0 | Parity bit (odd number) | | |
| 1 | Fixing assembly trouble | Out of order | Normal |
| 2 | Scanner unit trouble | Out of order | Normal |
| 3 | Fan motor trouble | Out of order | Normal |
| 4 | Reserved | | |
| 5 | Feeder assembly trouble | Out of order | Normal |
| 6 | Reserved | | |
| 7 | Reserved | | |

**Figure 13-526**

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Status 3 (misprint status in detail)

| Bit | Meaning | 1 | 0 |
|---|---|---|---|
| 0 | Parity bit (odd number) | | |
| 1 | Reserved | | |
| 2 | Reserved | | |
| 3 | Paper size error | Abnormal | Normal |
| 4 | Paper feeding fault | Abnormal | Normal |
| 5 | Reserved | | |
| 6 | BD signal trouble | Out of order | Normal |
| 7 | Reserved | | |

**Table 13-529**

[Bit 3]
When the registration clutch is turned off then on again and the recording paper leading edge sensor is ON, this becomes 1.

[Bit 4]
When the set or specified paper size is judged to be different from the paper feeding into the printer, this becomes 1.

[Bit 6]
When there is a fault in the laser scanning mechanism and the BD signal is not output at the prescribed timing (cycle and signal width), this becomes 1.


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Status 8 (call service man status)

| Bit | Meaning | 1 | 0 |
|---|---|---|---|
| 0 | Parity bit (odd size) | | |
| 1 | Fixing assembly trouble | Out of order | Normal |
| 2 | Scanner unit trouble | Out of order | Normal |
| 3 | Fan motor trouble | Out of order | Normal |
| 4 | Reserved | | |
| 5 | Feeder assembly trouble | Out of order | Normal |
| 6 | Reserved | | |
| 7 | Reserved | | |

**Table 13-530**

[Bit 1]
When trouble is detected in the fixing assembly's fixing heater and temperature control thermistor, this becomes 1.

[Bit2]
When trouble is detected in the laser scanner motor, laser unit or BD, this becomes 1.

[Bit 3]
When a fan trouble signal is detected more than 60 times within 200ms, this becomes 1.

[Bit 5]
When the main motor is out of order, this becomes 1.

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Status 35 (feeding assembly trouble status in detail)

| Bit | Meaning | 1 | 0 |
|---|---|---|---|
| 0 | Parity bit (odd number) | | |
| 1 | Reserved | | |
| 2 | Reserved | | |
| 3 | Reserved | | |
| 4 | Reserved | | |
| 5 | Reserved | | |
| 6 | Main motor trouble | Out of order | Normal |
| 7 | 0 | | |

**Table 13-531**

[Bit 6]
When the ready signal does not come continuously at 0.1 seconds after the main motor drive starts, this becomes 1.
When the ready signal is continuous at 0.1 seconds after the main motor drive has stopped, this becomes 1.


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Status 39 (fixing assembly trouble status in detail)

| Bit | Meaning | 1 | 0 |
|---|---|---|---|
| 0 | Parity bit (odd number) | | |
| 1 | Reserved | | |
| 2 | Drive circuit trouble | Out of order | Normal |
| 3 | 0 | | |
| 4 | Abnormally high temperature detected | Abnormal | Normal |
| 5 | Abnormally low temperature detected | Abnormal | Normal |
| 6 | Faulty startup detected | Abnormal | Normal |
| 7 | 0 | | |

**Table 13-532**

[Bit 2]
When power is not supplied to the fixing assembly, this becomes 1.

[Bit 4]
When the temperature of the fixing assembly is more than 20(C higher than the standard temperature for more than 30 seconds continuously, this becomes 1.

[Bit 5]
When the temperature of the fixing assembly is more than 10(C lower than the standard temperature for more than 30 seconds continuously, this becomes 1.

[Bit 6]
When the thermistor is down, this becomes 1.

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d) ADF test <6-4: ADF>

This is the ADF operation checking mode.

When 4 on the numeric key pad in the FACULTY TEST menu is pressed, the ADF test is selected.

When the document is set in the document inlet guide and the start key is pressed, the document is fed at a speed matching the selected resolution. The number on the display counter advances with each page.

It is possible to set up to 50 sheets of A4 paper, 20 sheets of A3/B4 paper.

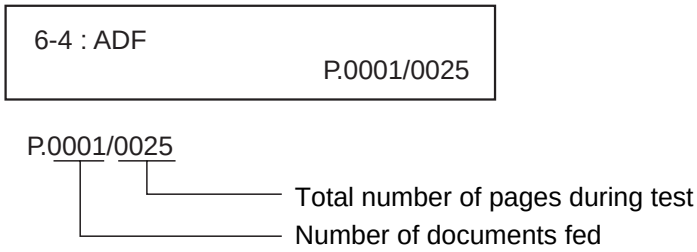


**Figure 13-527**

e) Stamp test <6-5: STAMP>

This is the stamp operation checking mode.

When 5 on the numeric key pad in the FACULTY TEST menu is pressed, the stamp test is selected.

The stamp test has the following two menus.

• Test menu 1

When 1 on the numeric key pad in the Stamp TEST menu is pressed, test menu 1 is selected. When a document is set in the ADF is this condition, the document is fed 20mm past the scanning position and is stamped 5 times at 10mm intervals from that position, then delivered.

• Test menu 2

When 2 on the numeric key pad in the Stamp TEST menu is pressed, test menu 2 is selected. When a document is set in the ADF is this condition, the document is fed 20mm past the scanning position and is stamped continuously at 10mm intervals from that position until the document edge sensor (DES) goes off.


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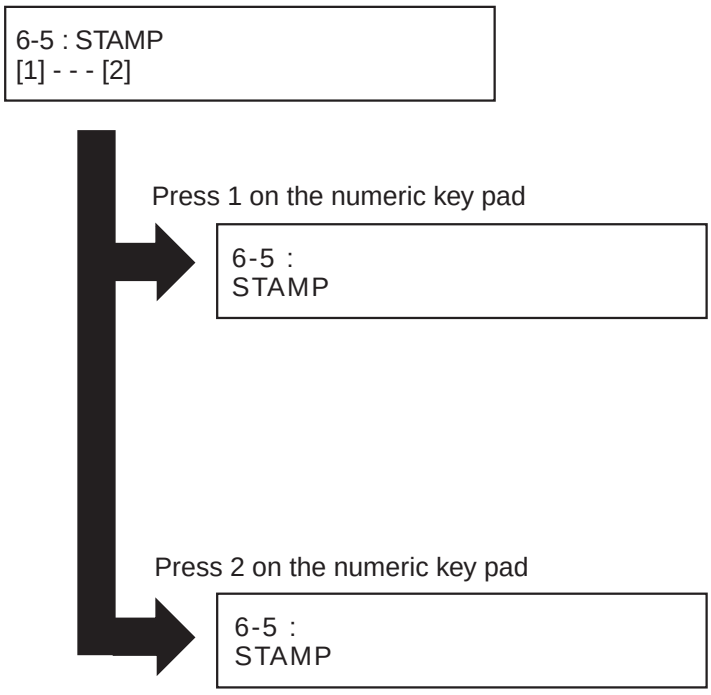


**Figure 13-528**

f) Speaker test <6-6: SPEAKER>

This mode is for checking the speaker operation.

When 6 on the numeric keypad in the FACULTY TEST menu is pressed, the speaker test is selected. In this test, a tonal signal is output from the speaker from 200Hz to 5kHz at 100Hz intervals. The sound volume is also switched. Check that the signal sound is coming out of the speaker.

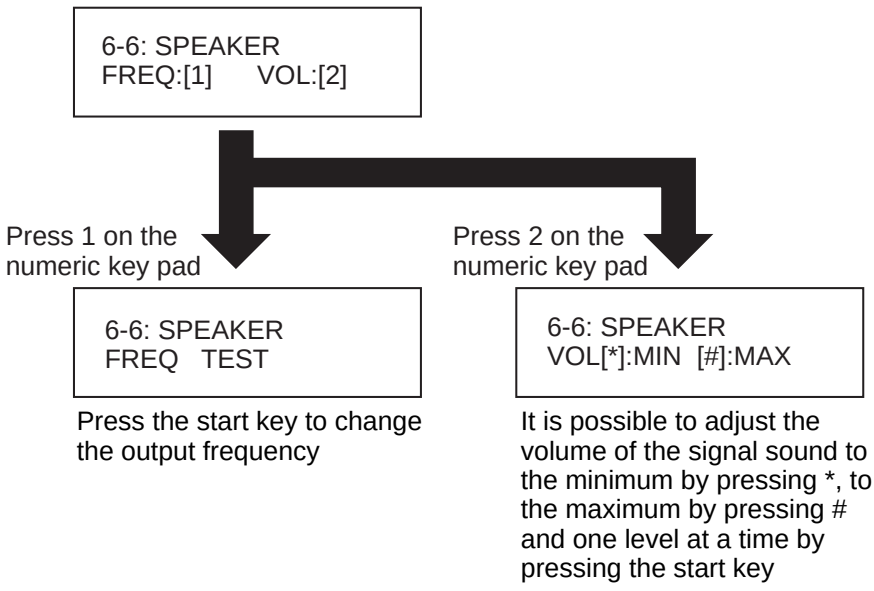
6-6: SPEAKER
FREQ:[1] VOL:[2]
Press 1 on the numeric key pad
Press 2 on the numeric key pad
6-6: SPEAKER
FREQ TEST
6-6: SPEAKER
VOL[*]:MIN [#]:MAX
Press the start key to change the output frequency
It is possible to adjust the volume of the signal sound to the minimum by pressing *, to the maximum by pressing # and one level at a time by pressing the start key

**Figure 13-529**



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g) Operation panel test <6-7: OPERATION PANEL>

This is a mode for checking the Operation panel operation.

When 7 on the numeric key pad in the FACULTY TEST menu is pressed, the OPERATION PANEL test menu is selected. The functions that can be checked in this mode are described below.

• Display test

When the start key on the OPERATION PANEL test menu is pressed, the display test is selected. In this test, “Perform LCD density adjustment” is shown on the display.

When the start key is pressed again, all black, all white, border and checker patterns are displayed in order.

• LED lamp test

When the start key is pressed after the display test has finished, the LED lamp test is selected.

When the start key is pressed, all the lamps on the Operation panel are illuminated.

Operation button test

When the start key is pressed after the LED lamp test has finished, the key test is selected.

Press the keys for the characters shown on the display, if the display goes out they are normal. The correspondence between the characters and buttons are shown in the table below.

When all the LEDs of both the completion stamp key and the direct transmission key characters have been illuminated, the display will go out.

| Characters | Operation key | Characters | Operation key |
|---|---|---|---|
| 1 to # | Numeric key pad | u | Data registration key |
| R | Redial key | % | Direct Tx key |
| C | Copy key | S | Stamp key |
| O | Hook key | c | Return key |
| D | Coded dial key | U | Screen selection key F1 |
| E (Right) | PRINT/SCAN key | V | Screen selection key F2 |
| E (Left) | Set key | W | Screen selection key F3 |
| L | Clear key | X | Screen selection key F4 |
| M | Fax monitor key | s | Collate key |
| / | Program key | r | Reset key |
| F | FAX key | P | Pause key |
| a | Copy special features key | ! | Energy saver key |

**Table 13-533**


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When all the characters displayed have disappeared, then the one-touch dial key test starts. Characters from a-z and A-Z are displayed. The display from characters a-B corresponds to the one-touch dial keys 01-28. When the one-touch dial keys are pressed, the characters corresponding to them disappear from the display.

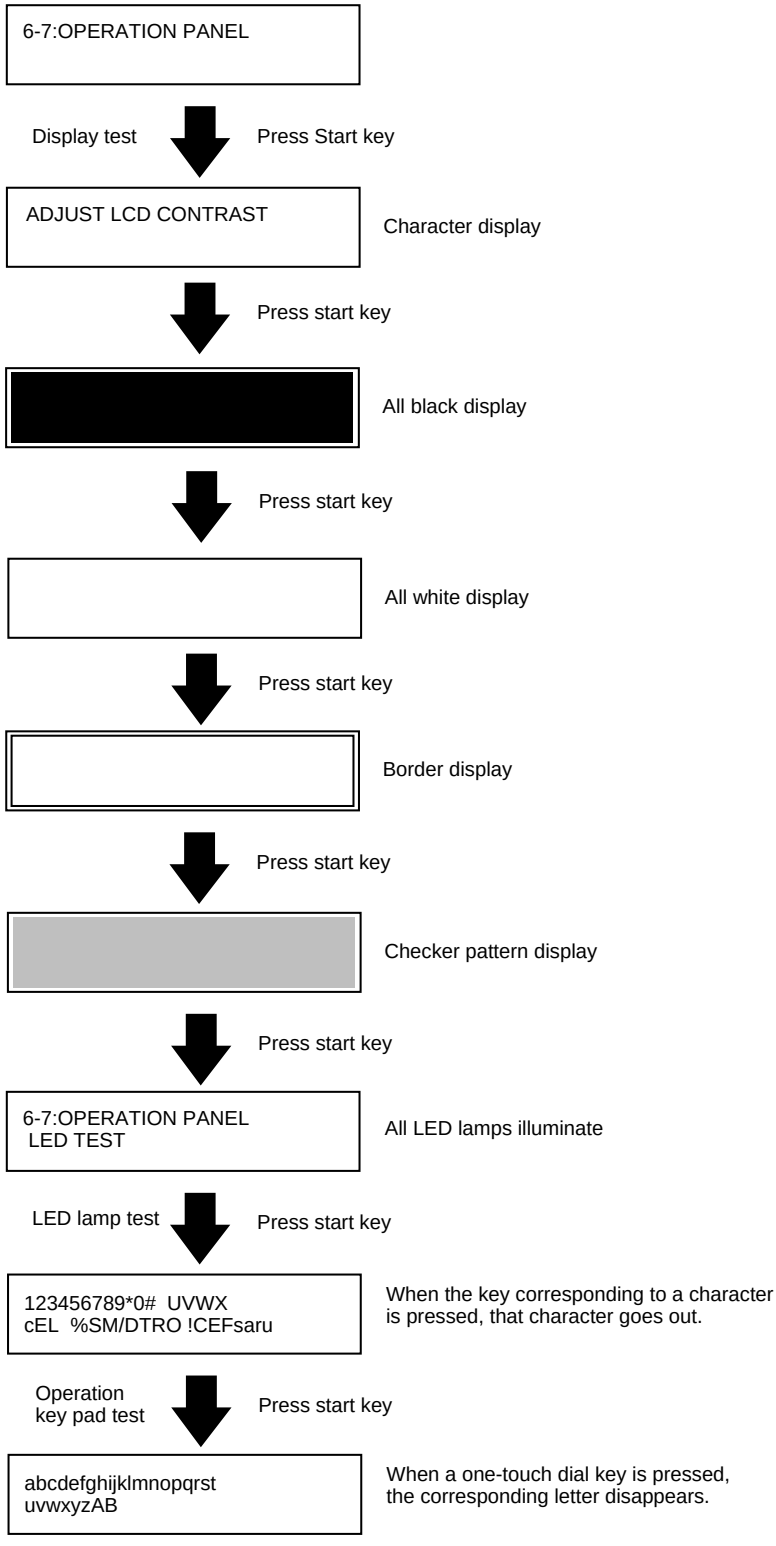


**Figure 13-530**

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h) Line signal reception test <6-9: LINE DETECT>

When 9 on the numeric key pad in the FACULTY TEST menu is pressed, the LINE DETECT test is selected. In test menu 1, the C1, FC and external telephone's fax are detected, and if signals are being properly detected by the NCU board, that is also detected.

h-1) Test menu 1

When 1 on the numeric key pad in the LINE DETECT menu is pressed, the Test menu 1 is selected. In this test the display will go from ON to OFF when C1, FC and external telephone OFF HOOK are detected from the telephone line connection terminal.

h-2) Test menu 3

When 3 on the numeric key pad in the LINE DETECT menu is pressed, test menu 3 is selected. In this test the display will go from OFF to ON when CNG is detected from the telephone line connection terminal.

h-3) Test menu 4

When 4 on the numeric key pad in the LINE DETECT menu is pressed, test menu 4 is selected. In this test the outgoing message can be checked. By selecting 0 or 1 on the numeric key pad, 2 types of outgoing messages are output from the telephone line and the speaker.

i) ESS test <6-#: ESS TEST>

When the # key on the numeric key pad in the FACULTY TEST menu is pressed, the ESS (energy saver function) test is run. Running this test puts this machine into the ESS mode and turns off all the LEDs except for the ESS key on the operation panel. The ESS mode is canceled by the following operations.

- When the ESS key is pressed
- When a document is set in the ADF
- When a fax arrives
- When the machine is off the hook
- When it is time to output a report
- When it becomes time to send a delayed call


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## 8. BOOK scanning test <8: BOOK TEST>

When 8 on the numeric key pad in the TEST MODE menu is pressed, the BOOK test is selected.

In this test the scanning lamp is illuminated and it is checked whether the scanning lamp moves at the speed corresponding to the scanning transmission image quality setting.

**Caution:**

This test is for factory use.

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# VI. REPORTS

## A. User reports

### 1. Reports output manually

The reports shown below are types output by user operation.

| Report types | Operation |
|---|---|
| 1-touch list 1<br>Coded dial list 1<br>Group dial list<br>1-touch (Detail)<br>Coded (Detail)<br>User data<br>Confidential mail box list<br>Document memory list<br>RX Memory box list<br>Activity report | To output the reports, after pressing the Report key, use the up and down arrow shift keys ▲▼ to select the desired report, and then press Set.<br>To output the telephone number list, after pressing the Report key, select SPEED DIAL LIST, and press Set. Then, select the desired telephone number list, and press Set once more. |

**Table 13-601**


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## 2. Reports output automatically

The reports shown below are output automatically according to user mode settings.

| Report types | Setting |
|---|---|
| Tx report<br>Rx report<br>Confidential Rx report<br>Memory box report<br>Activity report | Automatically output according to the output settings in the user data's report settings menu. |

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a) Memory clear list

01/18/1999 09:54 FAX 001

**********************************
*** MEMORY CLEAR REPORT ***
**********************************

MEMORY FILES DELETED

| TX/RX NO | MODE | DESTINATION TEL/ID | PGS. | SET TIME | ST. TIME | SENDER NAME |
|---|---|---|---|---|---|---|
| 0001 | TRANSMIT | 1234 | 1 | 01/18 09:47 | | |

**Figure 13-601**

TX/RX NO.: 4 digit display
MODE: transmission, polling transmission, timer transmission, relay reception, confidential reception, memory reception, memory box transmission, memory box reception
DESTINATION TEL/ID: one-touch dial, speed dial numbers
PGS.: total number of pages
SET. TIME: date and time displayed in 24 hour mode
ST. TIME: total starting time (displayed in 24 hour units)
SENDER NAME: Name of sender attached at time of transmission department code 4 digits (only when DAC SET up to ON).


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## B. Service report

Service mode setting status and previous communications history reports and reports of detailed error information are output in the service mode setting. The types of service reports are shown below.

| Report types | Operation |
|---|---|
| Sistem data list (error codes and dump lists included) | Press the report key when in the service mode. Select the lists you would like to output and press the set key. |
| Error transmission report (error codes and dump lists included) | Set the output in the user mode's report settings menu (it is possible to set whether error codes and dump lists are included by selection of service data #1 SSSW-SW01 Bit 0 and Bit 1) |
| Reception results report | Set the output in the user mode's report settings menu (it is possible to set whether error codes and dump lists are included by selection of service data #1 SSSW-SW01 Bit 0 and Bit 1) |

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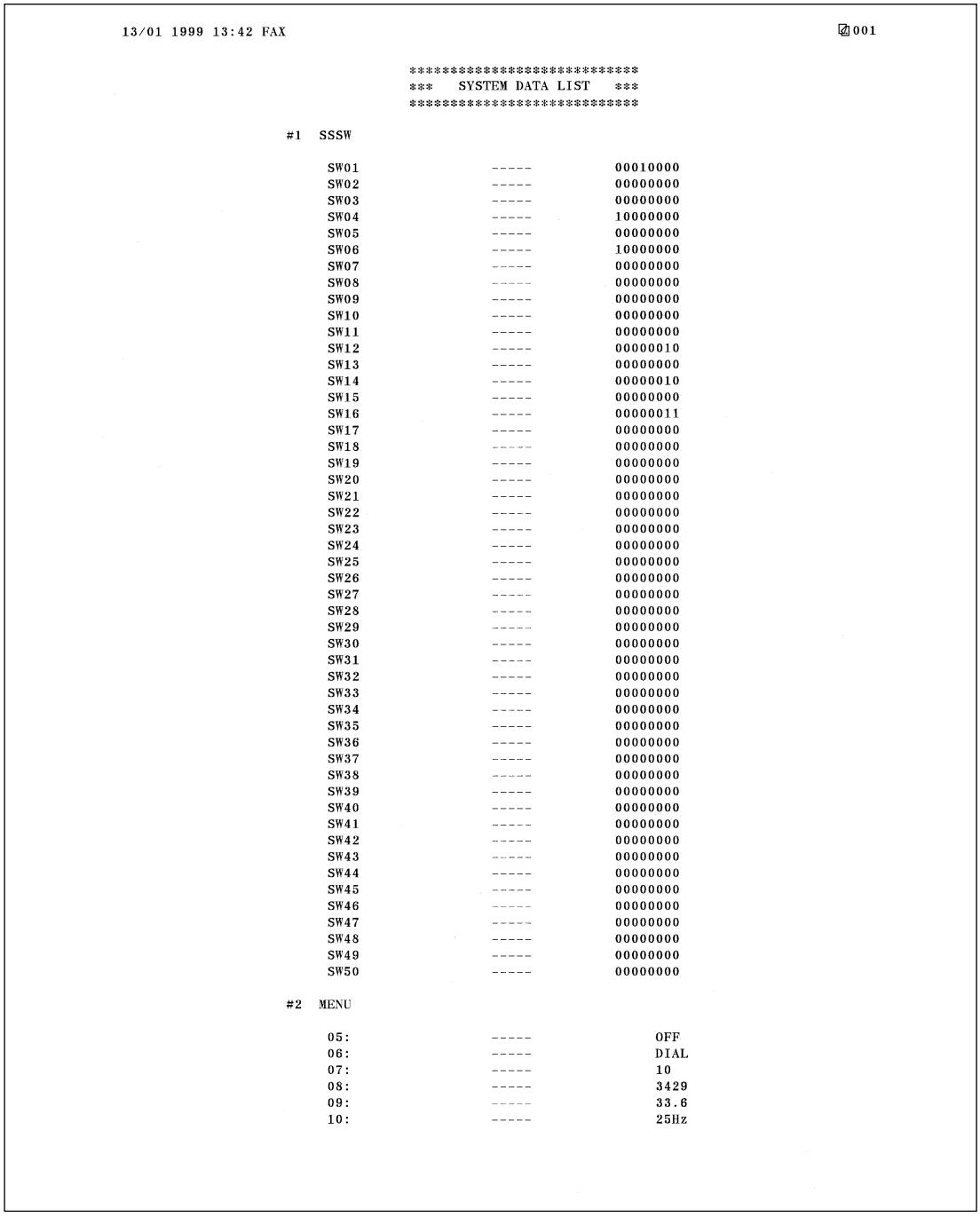
a) System data list
Displays the service software switch and service parameter settings status.



```
13/01 1999 13:42 FAX                                              001

                        ****************************
                        ***   SYSTEM DATA LIST   ***
                        ****************************

#1  SSSW

      SW01              -----          00010000
      SW02              -----          00000000
      SW03              -----          00000000
      SW04              -----          10000000
      SW05              -----          00000000
      SW06              -----          10000000
      SW07              -----          00000000
      SW08              -----          00000000
      SW09              -----          00000000
      SW10              -----          00000000
      SW11              -----          00000000
      SW12              -----          00000010
      SW13              -----          00000000
      SW14              -----          00000010
      SW15              -----          00000000
      SW16              -----          00000011
      SW17              -----          00000000
      SW18              -----          00000000
      SW19              -----          00000000
      SW20              -----          00000000
      SW21              -----          00000000
      SW22              -----          00000000
      SW23              -----          00000000
      SW24              -----          00000000
      SW25              -----          00000000
      SW26              -----          00000000
      SW27              -----          00000000
      SW28              -----          00000000
      SW29              -----          00000000
      SW30              -----          00000000
      SW31              -----          00000000
      SW32              -----          00000000
      SW33              -----          00000000
      SW34              -----          00000000
      SW35              -----          00000000
      SW36              -----          00000000
      SW37              -----          00000000
      SW38              -----          00000000
      SW39              -----          00000000
      SW40              -----          00000000
      SW41              -----          00000000
      SW42              -----          00000000
      SW43              -----          00000000
      SW44              -----          00000000
      SW45              -----          00000000
      SW46              -----          00000000
      SW47              -----          00000000
      SW48              -----          00000000
      SW49              -----          00000000
      SW50              -----          00000000

#2  MENU

      05:               -----            OFF
      06:               -----            DIAL
      07:               -----            10
      08:               -----            3429
      09:               -----            33.6
      10:               -----            25Hz
```

**Figure 13-602**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#3 NUMERIC Param.

| | | |
|---|---|---|
| 01: | ----- | 0 |
| 02: | ----- | 10 |
| 03: | ----- | 15 |
| 04: | ----- | 12 |
| 05: | ----- | 4 |
| 06: | ----- | 4 |
| 07: | ----- | 0 |
| 08: | ----- | 0 |
| 09: | ----- | 6 |
| 10: | ----- | 5500 |
| 11: | ----- | 3500 |
| 12: | ----- | 0 |
| 13: | ----- | 1300 |
| 14: | ----- | 0 |
| 15: | ----- | 120 |
| 16: | ----- | 4 |
| 17: | ----- | 100 |
| 18: | ----- | 0 |
| 19: | ----- | 400 |
| 20: | ----- | 100 |
| 21: | ----- | 0 |
| 22: | ----- | 400 |
| 23: | ----- | 4 |
| 24: | ----- | 10 |
| 25: | ----- | 60 |
| 26: | ----- | 4 |
| 27: | ----- | 0 |
| 28: | ----- | 0 |
| 29: | ----- | 0 |
| 30: | ----- | 20 |
| 51: | ----- | 0 |
| 52: | ----- | 0 |
| 53: | ----- | 0 |
| 54: | ----- | 0 |
| 55: | ----- | 0 |

#4A SPECIAL

| | | |
|---|---|---|
| SW01 | ----- | 00001000 |
| SW02 | ----- | 10000100 |
| SW03 | ----- | 00000001 |
| SW04 | ----- | 00000110 |
| SW05 | ----- | 00000000 |
| SW06 | ----- | 00000000 |
| SW07 | ----- | 01000000 |
| SW08 | ----- | 01000000 |
| SW09 | ----- | 00000000 |
| SW10 | ----- | 00000000 |
| SW11 | ----- | 00000000 |
| SW12 | ----- | 00000000 |
| SW13 | ----- | 00000000 |
| SW14 | ----- | 00000000 |
| SW15 | ----- | 00000000 |
| SW16 | ----- | 10110011 |
| SW17 | ----- | 00010000 |
| SW18 | ----- | 00000000 |
| SW19 | ----- | 00000000 |
| SW20 | ----- | 00000000 |
| SW21 | ----- | 00000000 |
| SW22 | ----- | 00000000 |
| SW23 | ----- | 00000000 |
| SW24 | ----- | 00000000 |
| SW25 | ----- | 00000011 |

**Figure 13-603**



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| | | |
|---|---|---|
| SW26 | ----- | 00000000 |
| SW27 | ----- | 10000000 |
| SW28 | ----- | 00000001 |
| SW29 | ----- | 00000000 |
| SW30 | ----- | 00000000 |
| 01 : | ----- | 5 |
| 02 : | ----- | 30 |
| 03 : | ----- | 30 |
| 04 : | ----- | 4 |
| 05 : | ----- | 150 |
| 06 : | ----- | 100 |
| 07 : | ----- | 6 |
| 08 : | ----- | 0 |
| 09 : | ----- | 0 |
| 10 : | ----- | 10 |
| 11 : | ----- | 2 |
| 12 : | ----- | 7 |
| 13 : | ----- | 9 |
| 14 : | ----- | 60 |
| 15 : | ----- | 6000 |
| 16 : | ----- | 8 |
| 17 : | ----- | 60 |
| 18 : | ----- | 99 |
| 19 : | ----- | 0 |
| 20 : | ----- | 58 |
| 21 : | ----- | 0 |
| 22 : | ----- | 0 |
| 23 : | ----- | 99 |
| 24 : | ----- | 10 |
| 25 : | ----- | 25 |
| 26 : | ----- | 2 |
| 27 : | ----- | 2 |
| 28 : | ----- | 0 |
| 29 : | ----- | 5 |
| 30 : | ----- | 6 |
| 31 : | ----- | 60 |
| 32 : | ----- | 94 |
| 33 : | ----- | 185 |
| 34 : | ----- | 102 |
| 35 : | ----- | 1420 |
| 36 : | ----- | 40 |
| 37 : | ----- | 74 |
| 38 : | ----- | 142 |
| 39 : | ----- | 1432 |
| 40 : | ----- | 0 |
| 41 : | ----- | 0 |
| 42 : | ----- | 0 |
| 43 : | ----- | 0 |
| 44 : | ----- | 0 |
| 45 : | ----- | 0 |
| 46 : | ----- | 0 |
| 47 : | ----- | 0 |
| 48 : | ----- | 0 |
| 49 : | ----- | 0 |
| 50 : | ----- | 0 |
| 51 : | ----- | 0 |
| 52 : | ----- | 0 |
| 53 : | ----- | 0 |
| 54 : | ----- | 0 |
| 55 : | ----- | 0 |
| 56 : | ----- | 0 |
| 57 : | ----- | 0 |
| 58 : | ----- | 0 |
| 59 : | ----- | 0 |
| 60 : | ----- | 0 |

**Figure 13-604**


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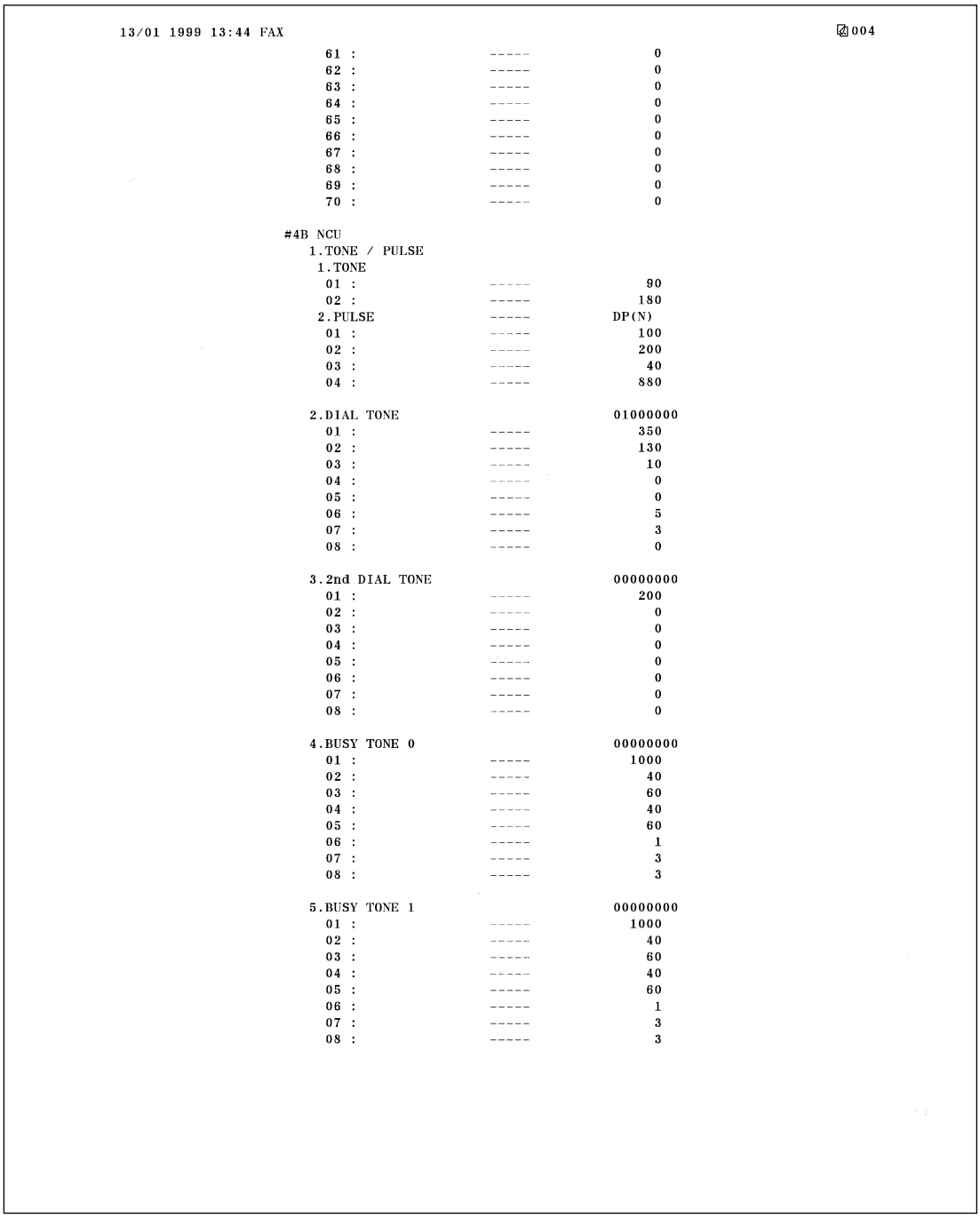

```
13/01 1999 13:44 FAX                                          004
                61 :                -----              0
                62 :                -----              0
                63 :                -----              0
                64 :                -----              0
                65 :                -----              0
                66 :                -----              0
                67 :                -----              0
                68 :                -----              0
                69 :                -----              0
                70 :                -----              0

             #4B NCU
                1.TONE / PULSE
                 1.TONE
                  01 :              -----             90
                  02 :              -----            180
                 2.PULSE            -----          DP(N)
                  01 :              -----            100
                  02 :              -----            200
                  03 :              -----             40
                  04 :              -----            880

                2.DIAL TONE                       01000000
                  01 :              -----            350
                  02 :              -----            130
                  03 :              -----             10
                  04 :              -----              0
                  05 :              -----              0
                  06 :              -----              5
                  07 :              -----              3
                  08 :              -----              0

                3.2nd DIAL TONE                   00000000
                  01 :              -----            200
                  02 :              -----              0
                  03 :              -----              0
                  04 :              -----              0
                  05 :              -----              0
                  06 :              -----              0
                  07 :              -----              0
                  08 :              -----              0

                4.BUSY TONE 0                     00000000
                  01 :              -----           1000
                  02 :              -----             40
                  03 :              -----             60
                  04 :              -----             40
                  05 :              -----             60
                  06 :              -----              1
                  07 :              -----              3
                  08 :              -----              3

                5.BUSY TONE 1                     00000000
                  01 :              -----           1000
                  02 :              -----             40
                  03 :              -----             60
                  04 :              -----             40
                  05 :              -----             60
                  06 :              -----              1
                  07 :              -----              3
                  08 :              -----              3
```

**Figure 13-605**



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13/01 1999 13:44 FAX 005

| | | |
|---|---|---|
| 6.REORDER TONE | | 10000000 |
| 01 : | ----- | 0 |
| 02 : | ----- | 35 |
| 03 : | ----- | 80 |
| 04 : | ----- | 35 |
| 05 : | ----- | 80 |
| 06 : | ----- | 5 |
| 07 : | ----- | 3 |
| 08 : | ----- | 3 |
| 7.MULTI | | |
| 01 : | ----- | 0 |
| 02 : | ----- | 10 |
| 03 : | ----- | 0 |
| 04 : | ----- | 0 |
| 8.AUTO RX | | |
| 01 : | ----- | 7 |
| 02 : | ----- | 60 |
| 03 : | ----- | 10 |
| 04 : | ----- | 60 |
| 05 : | ----- | 1100 |
| 06 : | ----- | 0 |
| 07 : | ----- | 2 |
| 08 : | ----- | 15 |
| 09 : | ----- | 60 |
| 9.CNG DETECT | | |
| 01 : | ----- | 35 |
| 02 : | ----- | 60 |
| 03 : | ----- | 0 |
| 04 : | ----- | 0 |
| 05 : | ----- | 0 |
| 06 : | ----- | 85 |
| 07 : | ----- | 40 |
| 08 : | ----- | 60 |
| 09 : | ----- | 8 |
| 10 : | ----- | 0 |
| 11 : | ----- | 2 |
| 12 : | ----- | 70 |
| 10.RKEY | | |
| 01 : | ----- | 9 |
| 02 : | ----- | 20 |
| 03 : | ----- | 0 |
| 11.PBX DIAL TONE | | 00000000 |
| 01 : | ----- | 200 |
| 02 : | ----- | 130 |
| 03 : | ----- | 10 |
| 04 : | ----- | 0 |
| 05 : | ----- | 0 |
| 06 : | ----- | 5 |
| 07 : | ----- | 3 |
| 08 : | ----- | 0 |
| 12.PBX BUSY TONE | | 00000000 |
| 01 : | ----- | 1000 |
| 02 : | ----- | 40 |
| 03 : | ----- | 60 |
| 04 : | ----- | 40 |
| 05 : | ----- | 60 |
| 06 : | ----- | 1 |
| 07 : | ----- | 3 |
| 08 : | ----- | 3 |

**Figure 13-606**


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#4C ISDN

ISDN BASIC

| | | |
|---|---|---|
| SW01 | ----- | 00000000 |
| SW02 | ----- | 00000000 |
| SW03 | ----- | 00000000 |
| SW04 | ----- | 00000000 |
| SW05 | ----- | 00000000 |
| SW06 | ----- | 00000000 |
| SW07 | ----- | 00010000 |
| SW08 | ----- | 00010000 |
| SW09 | ----- | 00000000 |
| SW10 | ----- | 00000000 |
| SW11 | ----- | 00000000 |
| SW12 | ----- | 00000000 |
| SW13 | ----- | 00000000 |
| SW14 | ----- | 00000000 |
| SW15 | ----- | 00000000 |
| SW16 | ----- | 00000000 |
| SW17 | ----- | 00000000 |
| SW18 | ----- | 00000000 |
| SW19 | ----- | 00000000 |
| SW20 | ----- | 00000000 |
| SW21 | ----- | 00000000 |
| SW22 | ----- | 00000000 |
| SW23 | ----- | 00000000 |
| SW24 | ----- | 00000000 |
| SW25 | ----- | 00000000 |
| SW26 | ----- | 00000000 |
| SW27 | ----- | 00000000 |
| SW28 | ----- | 00000000 |
| SW29 | ----- | 00000000 |
| SW30 | ----- | 00000000 |
| 01 : | ----- | 60 |
| 02 : | ----- | 3 |
| 03 : | ----- | 0 |
| 04 : | ----- | 0 |
| 05 : | ----- | 20 |
| 06 : | ----- | 20 |
| 07 : | ----- | 35 |
| 08 : | ----- | 30 |
| 09 : | ----- | 30 |
| 10 : | ----- | 30 |
| 11 : | ----- | 0 |
| 12 : | ----- | 0 |
| 13 : | ----- | 4 |
| 14 : | ----- | 4 |
| 15 : | ----- | 120 |
| 16 : | ----- | 0 |
| 17 : | ----- | 0 |
| 18 : | ----- | 0 |
| 19 : | ----- | 0 |
| 20 : | ----- | 0 |
| 21 : | ----- | 0 |
| 22 : | ----- | 0 |
| 23 : | ----- | 0 |
| 24 : | ----- | 0 |
| 25 : | ----- | 0 |
| 26 : | ----- | 0 |
| 27 : | ----- | 0 |
| 28 : | ----- | 0 |
| 29 : | ----- | 0 |
| 30 : | ----- | 0 |

**Figure 13-607**

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13/01 1999 13:45 FAX 007

| | | |
|---|---|---|
| 31 : | ----- | 0 |
| 32 : | ----- | 0 |
| 33 : | ----- | 0 |
| 34 : | ----- | 0 |
| 35 : | ----- | 0 |
| 36 : | ----- | 0 |
| 37 : | ----- | 0 |
| 38 : | ----- | 0 |
| 39 : | ----- | 0 |
| 40 : | ----- | 0 |

Redial Code

| | | |
|---|---|---|
| 001 : | ----- | 1017, 1018, 1019, 1027, 1031, |
| 006 : | ----- | 1034, 1041, 1042, 1044, 1049, |
| 011 : | ----- | 1127, 1131, 1144, 1145, 0, |
| 016 : | ----- | 0, 0, 0, 0, 0, |
| 021 : | ----- | 0, 0, 0, 0, 0, |
| 026 : | ----- | 0, 0, 0, 0, 0, |
| 031 : | ----- | 0, 0, 0, 0, 0, |
| 036 : | ----- | 0, 0, 0, 0, 0, |
| 041 : | ----- | 0, 0, 0, 0, 0, |
| 046 : | ----- | 0, 0, 0, 0, 0, |
| 051 : | ----- | 0, 0, 0, 0, 0, |
| 056 : | ----- | 0, 0, 0, 0, 0, |
| 061 : | ----- | 0, 0, 0, 0, 0, |
| 066 : | ----- | 0, 0, 0, 0, 0, |
| 071 : | ----- | 0, 0, 0, 0, 0, |
| 076 : | ----- | 0, 0, 0, 0, 0, |
| 081 : | ----- | 0, 0, 0, 0, 0, |
| 086 : | ----- | 0, 0, 0, 0, 0, |
| 091 : | ----- | 0, 0, 0, 0, 0, |
| 096 : | ----- | 0, 0, 0, 0, 0, |
| 101 : | ----- | 0, 0, 0, 0, 0, |
| 106 : | ----- | 0, 0, 0, 0, 0, |
| 111 : | ----- | 0, 0, 0, 0, 0, |
| 116 : | ----- | 0, 0, 0, 0, 0, |
| 121 : | ----- | 0, 0, 0, 0, 0, |
| 126 : | ----- | 0, 0, 0 |

G4/G3 Fallback

| | | |
|---|---|---|
| 001 : | ----- | 1003, 1018, 1057, 1058, 1063, |
| 006 : | ----- | 1065, 1070, 1079, 1088, 1127, |
| 011 : | ----- | 0, 0, 0, 0, 0, |
| 016 : | ----- | 0, 0, 0, 0, 0, |
| 021 : | ----- | 0, 0, 0, 0, 0, |
| 026 : | ----- | 0, 0, 0, 0, 0, |
| 031 : | ----- | 0, 0, 0, 0, 0, |
| 036 : | ----- | 0, 0, 0, 0, 0, |
| 041 : | ----- | 0, 0, 0, 0, 0, |
| 046 : | ----- | 0, 0, 0, 0, 0, |
| 051 : | ----- | 0, 0, 0, 0, 0, |
| 056 : | ----- | 0, 0, 0, 0, 0, |
| 061 : | ----- | 0, 0, 0, 0, 0, |
| 066 : | ----- | 0, 0, 0, 0, 0, |
| 071 : | ----- | 0, 0, 0, 0, 0, |
| 076 : | ----- | 0, 0, 0, 0, 0, |
| 081 : | ----- | 0, 0, 0, 0, 0, |
| 086 : | ----- | 0, 0, 0, 0, 0, |
| 091 : | ----- | 0, 0, 0, 0, 0, |
| 096 : | ----- | 0, 0, 0, 0, 0, |
| 101 : | ----- | 0, 0, 0, 0, 0, |
| 106 : | ----- | 0, 0, 0, 0, 0, |
| 111 : | ----- | 0, 0, 0, 0, 0, |
| 116 : | ----- | 0, 0, 0, 0, 0, |
| 121 : | ----- | 0, 0, 0, 0, 0, |
| 126 : | ----- | 0, 0, 0 |

**Figure 13-608**


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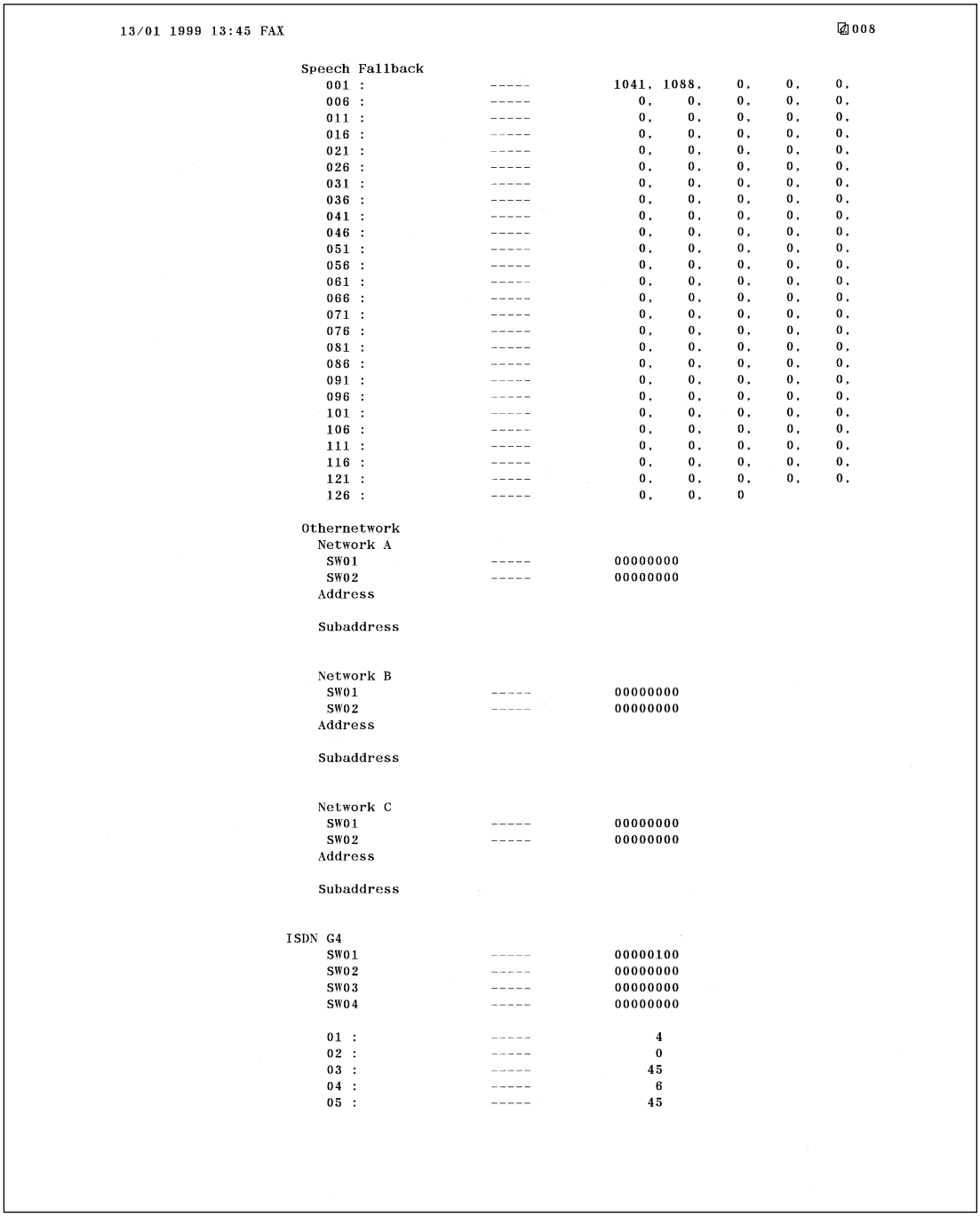

```
13/01 1999 13:45 FAX                                                  008

                Speech Fallback
                   001 :          -----      1041, 1088,    0,    0,    0,
                   006 :          -----         0,    0,    0,    0,    0,
                   011 :          -----         0,    0,    0,    0,    0,
                   016 :          -----         0,    0,    0,    0,    0,
                   021 :          -----         0,    0,    0,    0,    0,
                   026 :          -----         0,    0,    0,    0,    0,
                   031 :          -----         0,    0,    0,    0,    0,
                   036 :          -----         0,    0,    0,    0,    0,
                   041 :          -----         0,    0,    0,    0,    0,
                   046 :          -----         0,    0,    0,    0,    0,
                   051 :          -----         0,    0,    0,    0,    0,
                   056 :          -----         0,    0,    0,    0,    0,
                   061 :          -----         0,    0,    0,    0,    0,
                   066 :          -----         0,    0,    0,    0,    0,
                   071 :          -----         0,    0,    0,    0,    0,
                   076 :          -----         0,    0,    0,    0,    0,
                   081 :          -----         0,    0,    0,    0,    0,
                   086 :          -----         0,    0,    0,    0,    0,
                   091 :          -----         0,    0,    0,    0,    0,
                   096 :          -----         0,    0,    0,    0,    0,
                   101 :          -----         0,    0,    0,    0,    0,
                   106 :          -----         0,    0,    0,    0,    0,
                   111 :          -----         0,    0,    0,    0,    0,
                   116 :          -----         0,    0,    0,    0,    0,
                   121 :          -----         0,    0,    0,    0,    0,
                   126 :          -----         0,    0,    0

                Othernetwork
                  Network A
                    SW01          -----      00000000
                    SW02          -----      00000000
                  Address

                  Subaddress


                  Network B
                    SW01          -----      00000000
                    SW02          -----      00000000
                  Address

                  Subaddress


                  Network C
                    SW01          -----      00000000
                    SW02          -----      00000000
                  Address

                  Subaddress


              ISDN G4
                   SW01           -----      00000100
                   SW02           -----      00000000
                   SW03           -----      00000000
                   SW04           -----      00000000

                   01 :           -----          4
                   02 :           -----          0
                   03 :           -----         45
                   04 :           -----          6
                   05 :           -----         45
```

**Figure 13-609**



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13/01 1999 13:45 FAX 009

| | | |
|---|---|---|
| 06 : | ----- | 4 |
| 07 : | ----- | 60 |
| 08 : | ----- | 60 |
| 09 : | ----- | 4 |
| 10 : | ----- | 55 |
| 11 : | ----- | 1 |
| 12 : | ----- | 30 |
| 13 : | ----- | 4 |
| 14 : | ----- | 4 |
| 15 : | ----- | 4 |
| 16 : | ----- | 4 |
| 17 : | ----- | 1 |
| 18 : | ----- | 1 |
| 19 : | ----- | 2 |
| 20 : | ----- | 10 |
| 21 : | ----- | 2 |
| 22 : | ----- | 10 |
| 23 : | ----- | 3 |
| 24 : | ----- | 230 |
| 25 : | ----- | 3 |
| 26 : | ----- | 100 |
| 27 : | ----- | 1 |
| 28 : | ----- | 3 |
| 29 : | ----- | 1800 |
| 30 : | ----- | 1800 |
| 31 : | ----- | 1800 |
| 32 : | ----- | 0 |
| 33 : | ----- | 0 |
| 34 : | ----- | 0 |
| 35 : | ----- | 0 |
| 36 : | ----- | 0 |
| 37 : | ----- | 0 |
| 38 : | ----- | 0 |
| 39 : | ----- | 0 |
| 40 : | ----- | 0 |
| 41 : | ----- | 0 |
| 42 : | ----- | 0 |
| 43 : | ----- | 0 |
| 44 : | ----- | 0 |
| 45 : | ----- | 0 |
| 46 : | ----- | 0 |
| 47 : | ----- | 0 |
| 48 : | ----- | 0 |
| 49 : | ----- | 0 |
| 50 : | ----- | 0 |

ISDN G4 Circuit

| | | |
|---|---|---|
| SW01 | ----- | 00000000 |
| SW02 | ----- | 00000000 |

| | | |
|---|---|---|
| 01 : | ----- | 15 |
| 02 : | ----- | 0 |
| 03 : | ----- | 0 |
| 04 : | ----- | 4 |
| 05 : | ----- | 20 |
| 06 : | ----- | 7 |
| 07 : | ----- | 0 |
| 08 : | ----- | 4 |
| 09 : | ----- | 2 |
| 10 : | ----- | 7 |
| 11 : | ----- | 180 |
| 12 : | ----- | 200 |
| 13 : | ----- | 180 |
| 14 : | ----- | 180 |
| 15 : | ----- | 60 |

**Figure 13-610**


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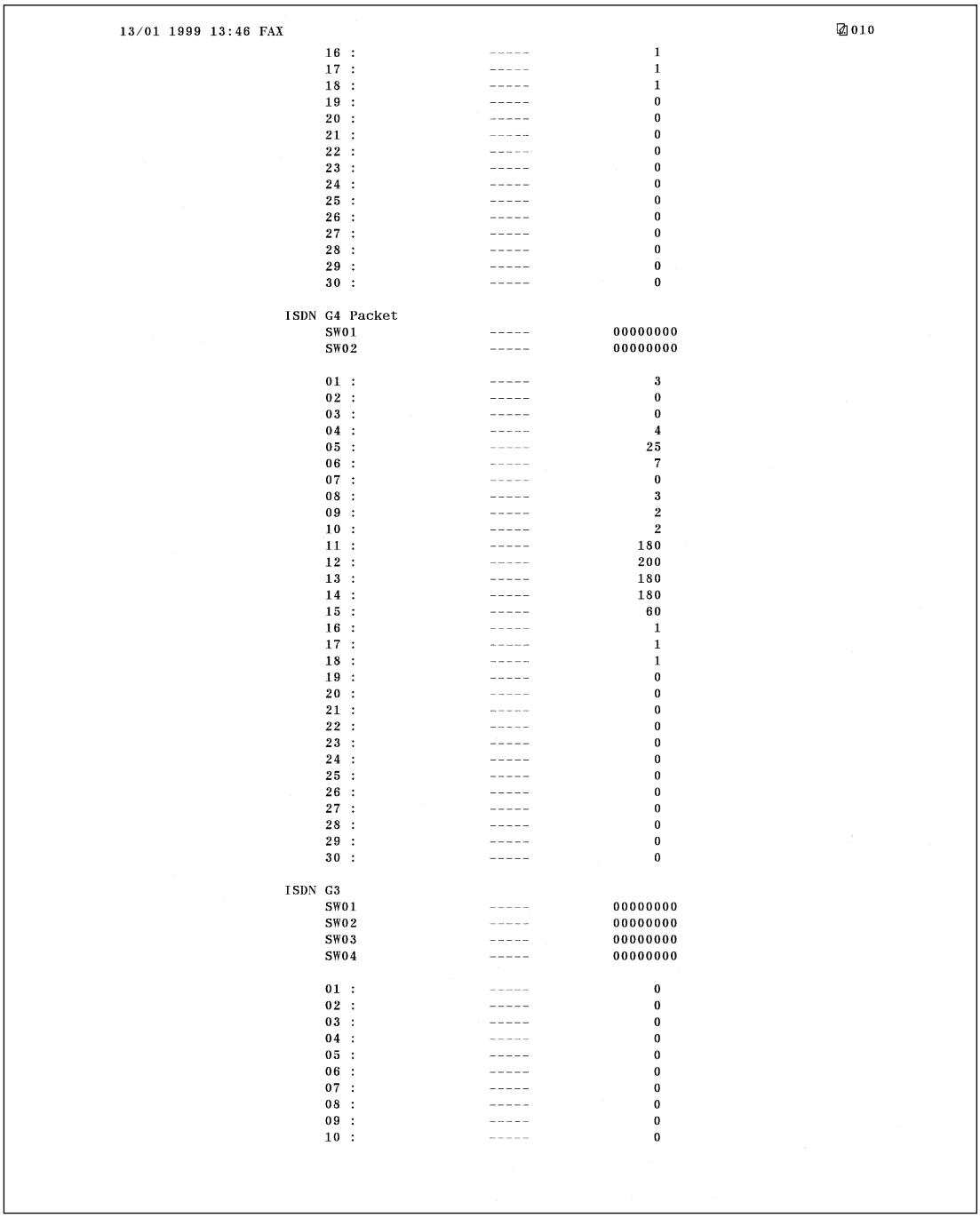

13/01 1999 13:46 FAX 010

| | | |
|---|---|---|
| 16 : | ----- | 1 |
| 17 : | ----- | 1 |
| 18 : | ----- | 1 |
| 19 : | ----- | 0 |
| 20 : | ----- | 0 |
| 21 : | ----- | 0 |
| 22 : | ----- | 0 |
| 23 : | ----- | 0 |
| 24 : | ----- | 0 |
| 25 : | ----- | 0 |
| 26 : | ----- | 0 |
| 27 : | ----- | 0 |
| 28 : | ----- | 0 |
| 29 : | ----- | 0 |
| 30 : | ----- | 0 |

ISDN G4 Packet

| | | |
|---|---|---|
| SW01 | ----- | 00000000 |
| SW02 | ----- | 00000000 |
| 01 : | ----- | 3 |
| 02 : | ----- | 0 |
| 03 : | ----- | 0 |
| 04 : | ----- | 4 |
| 05 : | ----- | 25 |
| 06 : | ----- | 7 |
| 07 : | ----- | 0 |
| 08 : | ----- | 3 |
| 09 : | ----- | 2 |
| 10 : | ----- | 2 |
| 11 : | ----- | 180 |
| 12 : | ----- | 200 |
| 13 : | ----- | 180 |
| 14 : | ----- | 180 |
| 15 : | ----- | 60 |
| 16 : | ----- | 1 |
| 17 : | ----- | 1 |
| 18 : | ----- | 1 |
| 19 : | ----- | 0 |
| 20 : | ----- | 0 |
| 21 : | ----- | 0 |
| 22 : | ----- | 0 |
| 23 : | ----- | 0 |
| 24 : | ----- | 0 |
| 25 : | ----- | 0 |
| 26 : | ----- | 0 |
| 27 : | ----- | 0 |
| 28 : | ----- | 0 |
| 29 : | ----- | 0 |
| 30 : | ----- | 0 |

ISDN G3

| | | |
|---|---|---|
| SW01 | ----- | 00000000 |
| SW02 | ----- | 00000000 |
| SW03 | ----- | 00000000 |
| SW04 | ----- | 00000000 |
| 01 : | ----- | 0 |
| 02 : | ----- | 0 |
| 03 : | ----- | 0 |
| 04 : | ----- | 0 |
| 05 : | ----- | 0 |
| 06 : | ----- | 0 |
| 07 : | ----- | 0 |
| 08 : | ----- | 0 |
| 09 : | ----- | 0 |
| 10 : | ----- | 0 |

**Figure 13-611**

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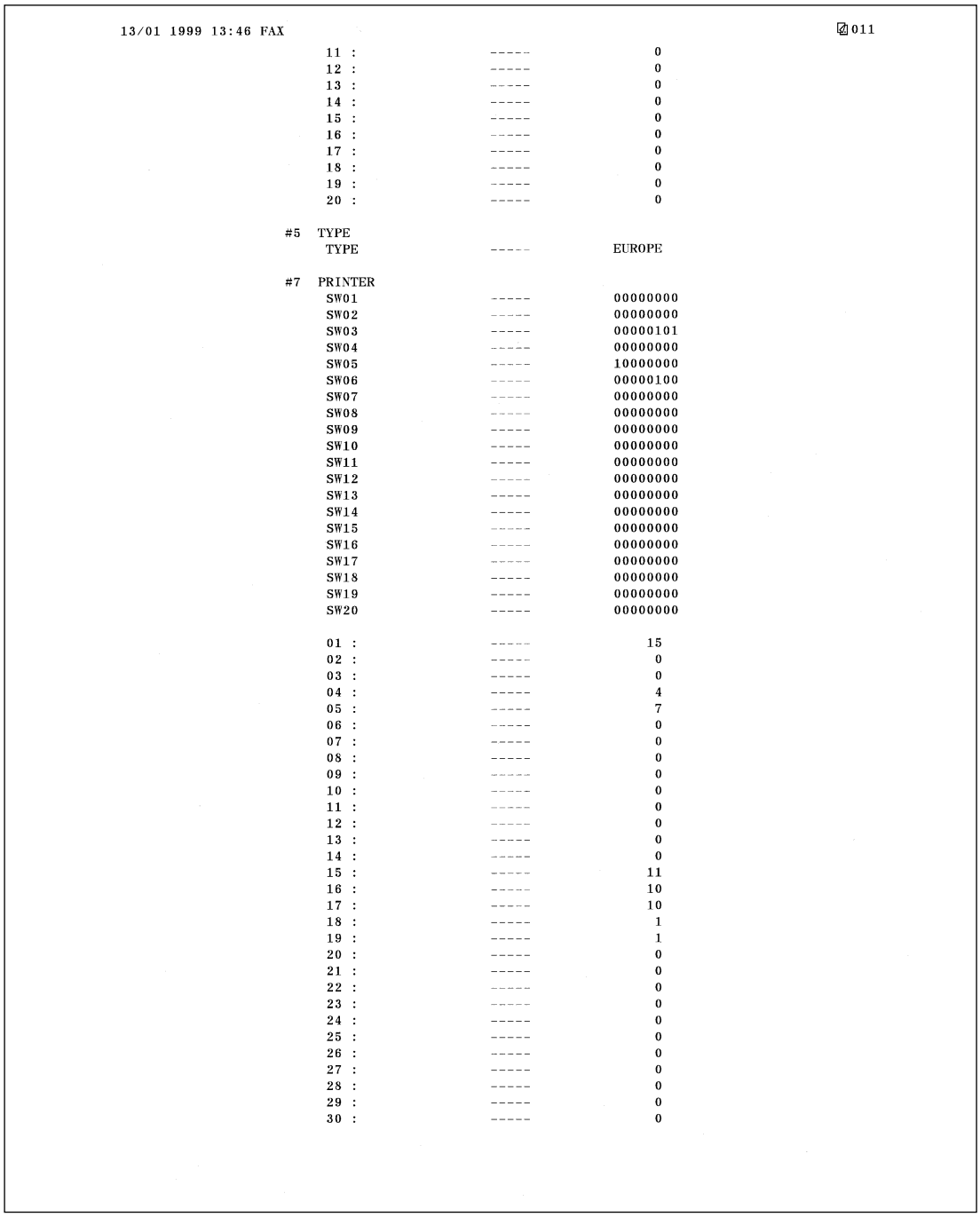

13/01 1999 13:46 FAX 011

| | | |
|---|---|---|
| 11 : | ----- | 0 |
| 12 : | ----- | 0 |
| 13 : | ----- | 0 |
| 14 : | ----- | 0 |
| 15 : | ----- | 0 |
| 16 : | ----- | 0 |
| 17 : | ----- | 0 |
| 18 : | ----- | 0 |
| 19 : | ----- | 0 |
| 20 : | ----- | 0 |
| #5 TYPE | | |
| TYPE | ----- | EUROPE |
| #7 PRINTER | | |
| SW01 | ----- | 00000000 |
| SW02 | ----- | 00000000 |
| SW03 | ----- | 00000101 |
| SW04 | ----- | 00000000 |
| SW05 | ----- | 10000000 |
| SW06 | ----- | 00000100 |
| SW07 | ----- | 00000000 |
| SW08 | ----- | 00000000 |
| SW09 | ----- | 00000000 |
| SW10 | ----- | 00000000 |
| SW11 | ----- | 00000000 |
| SW12 | ----- | 00000000 |
| SW13 | ----- | 00000000 |
| SW14 | ----- | 00000000 |
| SW15 | ----- | 00000000 |
| SW16 | ----- | 00000000 |
| SW17 | ----- | 00000000 |
| SW18 | ----- | 00000000 |
| SW19 | ----- | 00000000 |
| SW20 | ----- | 00000000 |
| 01 : | ----- | 15 |
| 02 : | ----- | 0 |
| 03 : | ----- | 0 |
| 04 : | ----- | 4 |
| 05 : | ----- | 7 |
| 06 : | ----- | 0 |
| 07 : | ----- | 0 |
| 08 : | ----- | 0 |
| 09 : | ----- | 0 |
| 10 : | ----- | 0 |
| 11 : | ----- | 0 |
| 12 : | ----- | 0 |
| 13 : | ----- | 0 |
| 14 : | ----- | 0 |
| 15 : | ----- | 11 |
| 16 : | ----- | 10 |
| 17 : | ----- | 10 |
| 18 : | ----- | 1 |
| 19 : | ----- | 1 |
| 20 : | ----- | 0 |
| 21 : | ----- | 0 |
| 22 : | ----- | 0 |
| 23 : | ----- | 0 |
| 24 : | ----- | 0 |
| 25 : | ----- | 0 |
| 26 : | ----- | 0 |
| 27 : | ----- | 0 |
| 28 : | ----- | 0 |
| 29 : | ----- | 0 |
| 30 : | ----- | 0 |

**Figure 13-612**


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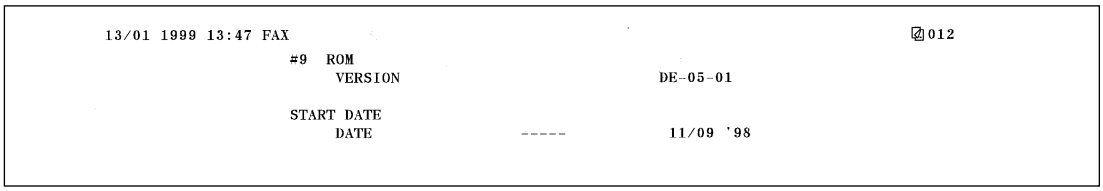


**Figure 13-613**

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b) System dump list
Displays previous communications status and error communications history.

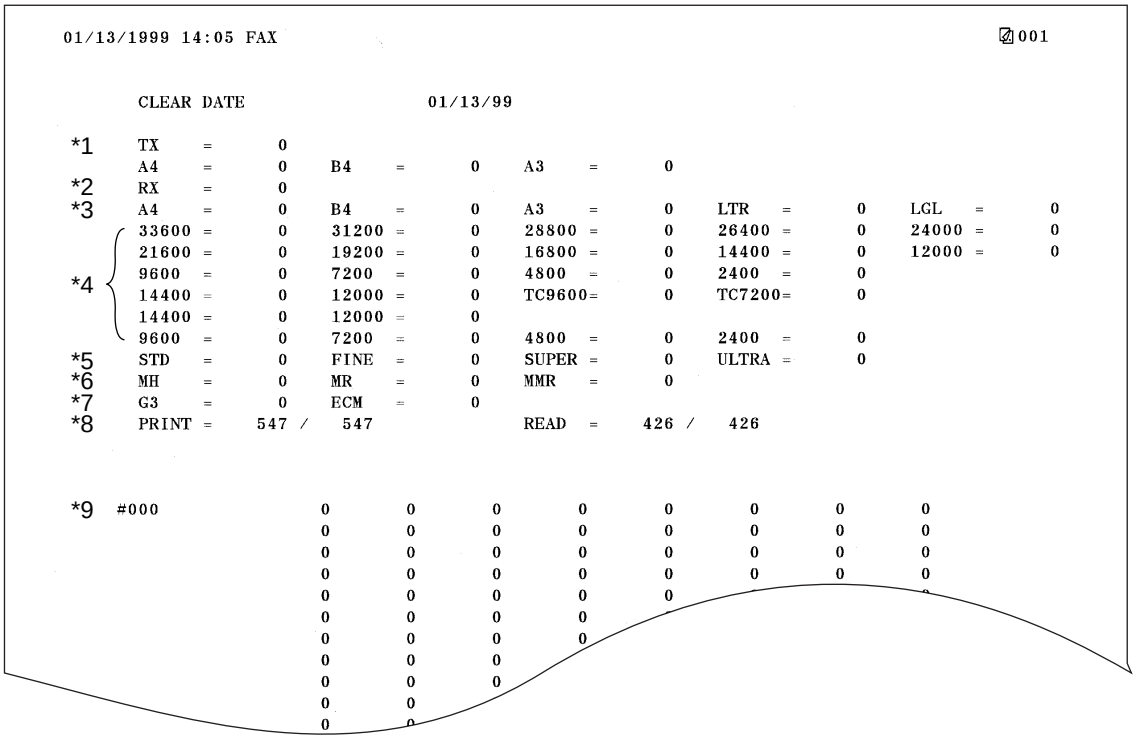


**Figure 13-614**

*1: TX: Total number of pages transmitted
*2: RX: Total number of pages received
*3: Number of pages sent and received by document size
*4: Number of pages sent and received by modem speed
*5: Number of pages sent and received by mode (standard/fine/superfine/ultra fine)
*6: Number of pages sent and received by encoding method
*7: Times sent and received by mode
*8: Pages printed/total number of pages printed. pages read/total number of pages read
*9: Number of errors by error code
[Display example]

| | | | | | |
|---|---|---|---|---|---|
| ##280 | 1 | 7 | 3 | 0 | 0 |
| | Number of ##0280 errors | Number of ##0281 errors | Number of ##0282 errors | | |


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Displays information about the three most recent communication errors.

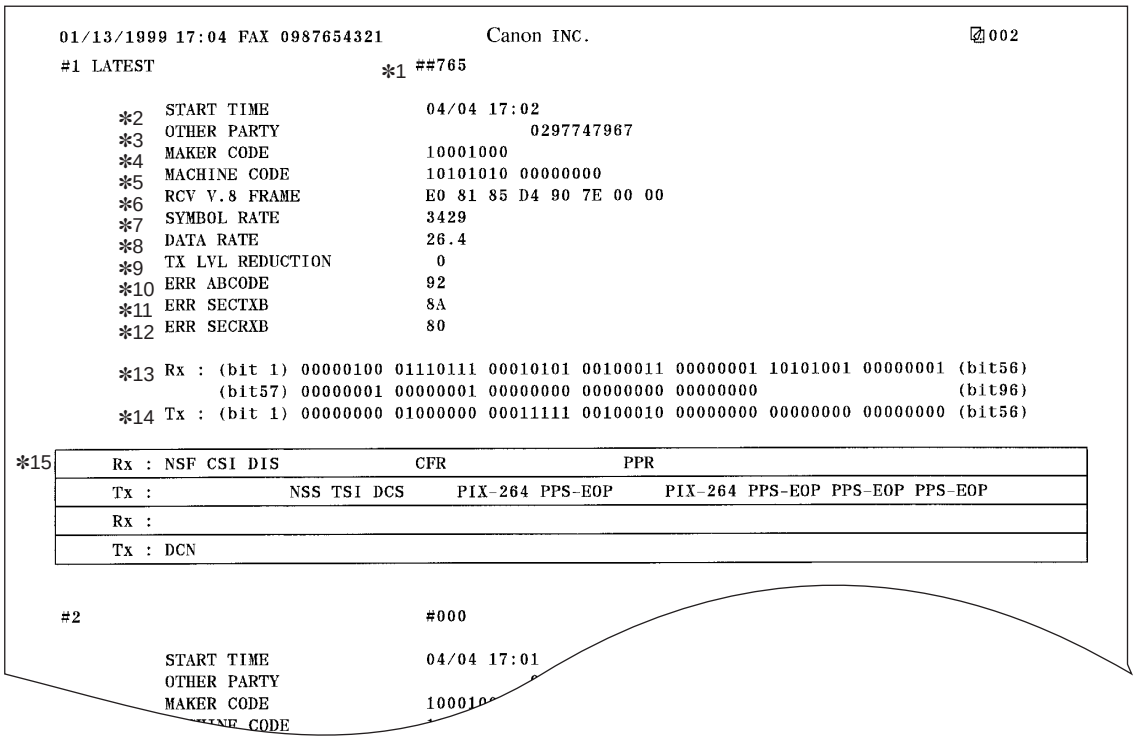


**Figure 13-615**



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*1: Service error code
*2: START TIME: Date and time (displays in 24 hour mode)
*3: OTHER PARTY: Telephone number sent from the other party
*4: MAKER CODE: Manufacturer code
*5: MACHINE CODE: Code by machine type
*6: V.8 signal code contents received from the other party's machine
*7: Symbol speed used by primary channel
*8: Data speed used by primary channel
*9: 0 (fixed)
*10: Code output by modem when transaction ends in error (do not use in service)
*11: Modem transmission status when transaction ends in error (do not use in service)
*12: Modem reception status when transaction ends in error (do not use in service)
*13: Received DIS, DCS or DTC bit1-48
*14: Transmitted DIS, DCS or DTC bit1-48
*15: RX= Received protocol signal
TX= Transmitted protocol signal


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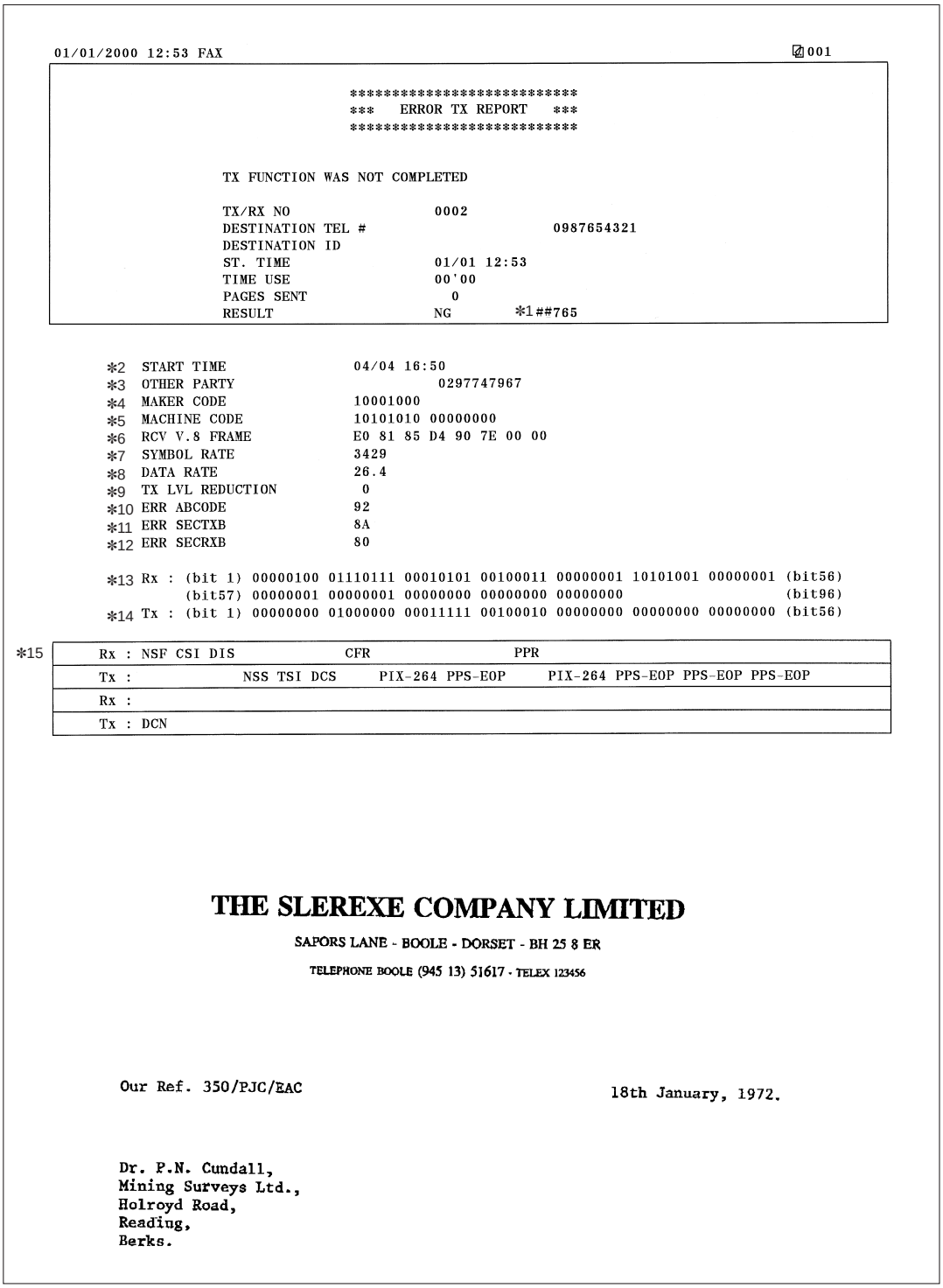
c) Error transmission report (for service use)

Includes service error codes and error dump lists to the error transmission report.

To include service error codes and error dump lists, set service mode SSSW-SW01.

When the transmission results report is set to include transmitted images in the user mode's report setting, a part of the first page of the transmitted image is appended when the document is received into memory.



```
01/01/2000 12:53 FAX                                                  001

                          **************************
                          ***   ERROR TX REPORT   ***
                          **************************


                TX FUNCTION WAS NOT COMPLETED

                TX/RX NO                  0002
                DESTINATION TEL #                      0987654321
                DESTINATION ID
                ST. TIME                  01/01 12:53
                TIME USE                  00'00
                PAGES SENT                  0
                RESULT                    NG        *1##765

        *2  START TIME                  04/04 16:50
        *3  OTHER PARTY                          0297747967
        *4  MAKER CODE                  10001000
        *5  MACHINE CODE                10101010 00000000
        *6  RCV V.8 FRAME               E0 81 85 D4 90 7E 00 00
        *7  SYMBOL RATE                 3429
        *8  DATA RATE                   26.4
        *9  TX LVL REDUCTION             0
        *10 ERR ABCODE                  92
        *11 ERR SECTXB                  8A
        *12 ERR SECRXB                  80

        *13 Rx : (bit 1) 00000100 01110111 00010101 00100011 00000001 10101001 00000001 (bit56)
                 (bit57) 00000001 00000001 00000000 00000000 00000000                   (bit96)
        *14 Tx : (bit 1) 00000000 01000000 00011111 00100010 00000000 00000000 00000000 (bit56)

*15 +-------------------------------------------------------------------------------------------+
    | Rx : NSF CSI DIS              CFR                    PPR                                  |
    | Tx :              NSS TSI DCS      PIX-264 PPS-EOP      PIX-264 PPS-EOP PPS-EOP PPS-EOP |
    | Rx :                                                                                      |
    | Tx : DCN                                                                                  |
    +-------------------------------------------------------------------------------------------+
```

THE SLEREXE COMPANY LIMITED

SAPORS LANE - BOOLE - DORSET - BH 25 8 ER

TELEPHONE BOOLE (945 13) 51617 - TELEX 123456

Our Ref. 350/PJC/EAC 18th January, 1972.

Dr. P.N. Cundall,
Mining Surveys Ltd.,
Holroyd Road,
Reading,
Berks.

**Figure 13-616**



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*1: Service error code
*2: START TIME: Date and time (displays in 24 hour mode)
*3: OTHER PARTY: Telephone number sent from the other party
*4: MAKER CODE: Manufacturer code
*5: MACHINE CODE: Code by machine type
*6: V.8 signal code contents received from the other party's machine
*7: Symbol speed used by primary channel
*8: Data speed used by primary channel
*9: 0 (fixed)
*10: Code output by modem when transaction ends in error (do not use in service)
*11: Modem transmission status when transaction ends in error (do not use in service)
*12: Modem reception status when transaction ends in error (do not use in service)
*13: Received DIS, DCS or DTC bit1-48
*14: Transmitted DIS, DCS or DTC bit1-48
*15: RX= Received protocol signal
TX= Transmitted protocol signal


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# VII. USER ERRORS

| #0001 [TX] Document jam | |
|---|---|
| Cause | Countermeasure |
| • Document became jammed. | • Remove the document and try sending again. |
| • Document's size or thickness is outside the standards. | (1) Send after making a copy by book scanning or use book scanning transmission?<br>(2) Send thin documents by book scanning transmission. |
| • Internal mechanism fault. | Refer to "Document jam detection" in the ADF service manual. |

| #0003 [TX/RX] 1 page copy/send receive time over | |
|---|---|
| Cause | Countermeasure |
| • 1 page document length is more than 1 m or takes more than the prescribed time (32 minutes) to send/copy. | (1) Make a copy by book scanning. Divide the document and send/copy.<br>(2) Increase the page timer value using #1 SSSW-SW12 Bit 0 and Bit 1. |
| • Takes more than the prescribed time (32 minutes) to receive. | (1) Have the sender divide the document and send in parts.<br>(2) Contact the sender and have the cause investigated.<br>(3) Increase the page timer value using #1 SSSW-SW12 Bit 0 and Bit 1. |
| • Internal mechanism fault. | See "Document jam detection" in the ADF service manual. |

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| #0005 [TX/RX] Initial identifier (T0/T1) time over | |
|---|---|
| Cause | Countermeasure |
| • TEL LINE TYPE setting mistake. | • Set TEL LINE TYPE correctly. |
| • Time until connection with the other party's machine is long. | (1) Add a long pause when registering an autodial entry and delay the timer start.<br>(2) Increase the T0 timer by #3 NUMERIC Param. 010 so it won't time out. |
| • Other party's machine does not respond. | • Contact the other party and have the cause investigated. |
| • A significant signal cannot be detected after DIS signal transmission is completed. | • Increase the T1 timer by #3 NUMERIC Param. 011 so it won't time out. |
| • Other party's machine's communication mode does not match. | • No countermeasure possible because the communications mode is a specification of the machine. |
| (1) Other party's machine mis-operates due to echo at transmission.<br>(2) Mis-operation due to echo at reception. | • See #1 SSSW SW03 for echo countermeasures. |

| #0008 [TX] Password rejected at polling transmission | |
|---|---|
| Cause | Countermeasure |
| • Other party's password and your machine's password do not match. | (1) Contact the other party and synchronize the passwords.<br>(2) Make a DAT recording of the communication protocol and analyze it. |

| #0009 [RX] Jam/Add paper | |
|---|---|
| Cause | Countermeasure |
| • Paper is jammed. | • Remove the paper jam. |
| • Paper has run out. | • Set more paper. |
| • Internal mechanism fault. | (1) Check the Add paper sensor, pick-up sensor, registration sensor, leading edge sensor and delivery sensor flags.<br>(2) Check by TEST MODE/FACULTY TEST/[3]SENSOR TEST.<br>(3) Check according to this manual's Feeding fault countermeasures.<br>(4) Replace the DC controller circuit. |


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| #0011 [RX] Polling reception error | |
|---|---|
| Cause | Countermeasure |
| • No document is set in the other party's machine.<br>• The document was not set properly at the time of transmission, so polling reception occurred. | • Have the other party set the document properly.<br>• Set the document properly and send it. |

| #0012 [TX] Other party's machine is out of paper | |
|---|---|
| Cause | Countermeasure |
| • Other party's machine is out of paper. | • Have the other party set paper. |

| #0018 [TX/RX] Automatic calling error | |
|---|---|
| Cause | Countermeasure |
| • TEL LINE TYPE set incorrectly. | • Set TEL LINE TYPE correctly. |
| • Telephone line connection time is long. | (1) Add a long pause when registering an autodial entry and delay the timer start.<br>(2) Increase the T0 timer by #3 NUMERIC Param. 010 so it won't time out. |
| • Time limit expires due to other party's machine's busy signal. | • Call again. |
| • Time limit expires due to other party's machine's not being connected or not having power. | • Contact the operator of the other party's machine and have the cause investigated. |
| • Time limit expires due to other party's machine having no recording paper. | • Have the other party set recording paper in the machine. |

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| #0021 [RX] DCN received at time of reception | |
|---|---|
| Cause | Countermeasure |
| • Password does not match. | • Contact the other party and synchronize the passwords. |

| #0022 [TX] Can not call | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine's telephone number is not registered in autodial at the time of broadcast transmission or multi-polling reception. | • Enter the other party's telephone number in autodial. |

| #0025 [TX/RX] Autodial is set incorrectly | |
|---|---|
| Cause | Countermeasure |
| • At the time of autodialing, confidential and relay directives are set. | • Set autodial correctly. |

| #0033 [TX] Confidential transmission not possible | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine does not have a confidential mailbox function. | • Perform regular transmission since confidential transmission is not possible. |

| #0034 [TX] Cannot transmit to other party's machine's confidential box | |
|---|---|
| Cause | Countermeasure |
| • The designated confidential mail box does not exist in the other party's machine. | • Confirm the other party's machine's confidential box number and send a confidential transmission. |
| • The other party's machine's memory is full. | • Check the amount of free memory in the other party's machine and have them output any memory reception documents. |


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| #0035 [TX] Relay originating transmission not possible | |
|---|---|
| Cause | Countermeasure |
| • No relay function in the other party's machine. | • Transmit direct by sequential broadcast transmission since relay transmission is not possible. |

| #0036 [TX] Relay directive transmission not possible | |
|---|---|
| Cause | Countermeasure |
| • The specified relay box does not exist in the other party's machine. | • Confirm the other party's machine's relay box and send a relay originating transmission. |
| • The relay originating user's telephone number is not entered in the relaying machine's one-touch dial or speed dial. | • Have the relay originating user's telephone number entered in the relaying machine's one-touch dial or coded dial. |
| • The relaying machine's memory is full. | • Contact the relay station and have them clear unnecessary image data. |

| #0037 [RX] Image memory exceeded at time of reception | |
|---|---|
| Cause | Countermeasure |
| • Excessive document information at time of reception. | • Have the other party clear unnecessary image data, and resend. |

| #0059 [TX] The number dialed and the number connected to (CSI) do not match | |
|---|---|
| Cause | Countermeasure |
| • The user's telephone number on the receiving side is not registered. | • Contact the other party and have them register the user's telephone number.<br>• Set so that the user data's destination is not checked. |

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| #0080 [TX] The other party's machine has no ITU-T recommended sub-address reception function | |
|---|---|
| Cause | Countermeasure |
| • DIS bit 49 received from the other party's machine becomes 0. | • Send to another fax machine which has that function.<br>• When the other party's machine is of a different type, use normal G3 transmission. |

| #0081 [TX] Other party's machine has no ITU-T recommended password reception function | |
|---|---|
| Cause | Countermeasure |
| • DIS bit 50 received from the other party's machine becomes 0. | • Send to another fax machine which has that function.<br>• When the other party's machine is of a different type, use normal G3 transmission. |

| #0082 [TX] Other party's machine has no ITU-T recommended selective polling reception function | |
|---|---|
| Cause | Countermeasure |
| • DIS bit 47 received from the other party's machine becomes 0. | • Send to another fax machine which has that function.<br>• When the other party's machine is of a different type, have the destination set their machine so it can send polling transmissions, then perform polling reception. |

| #0102 [TX] Password/sub-address sent at time of transmission, but DCN received | |
|---|---|
| Cause | Countermeasure |
| • Password/sub-address not set in the other party's machine.<br>• The other party's machine's memory is full. | • Contact the other party and have them set the password/sub-address.<br>• Contact the other party and have them clear some memory. |


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| #0995 [TX] Memory transmission reservation canceled | |
|---|---|
| Cause | Countermeasure |
| • The user intentionally canceled the memory transmission reservation. | • Resend. |

| [TX] DATA ERROR displayed | |
|---|---|
| Cause | Countermeasure |
| • Checksum error. Displayed upon image processor PCB replacement, SRAM fault, and back up battery replacement. | • Press the set key. |

**Caution:**

When DATA ERROR is displayed, the set key must be pressed for recovery to take place.
However, when the set key is pressed, the user data will be erased. Therefore, before pressing the set key, check with the user.

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# VIII. SERVICE ERRORS

• G3 mode error codes

| ## 0100 [TX] Limit for the number of protocol signal re-transmissions is exceeded at time of transmission | |
|---|---|
| Cause | Countermeasure |
| • (After Q signal is output after the image signal)<br>The line condition is poor and the other party's machine can not properly receive the image signal or Q signal. | • (After Q signal is output after the image signal)<br>(1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the image signal or Q signal.<br>(2) Lower the Tx start speed in user mode system settings.<br>(3) Adjust the NL equalizer in #2 MENU parameter 005 ,so the other party's machine can properly receive the image signal or Q signal.<br>(4) Add an echo protect tone to the V29 modem signal using #1 SSSW-SW03 Bit 1. |
| • (After TCF is before after the image signal)<br>The output level is low and the other party's machine can not properly receive the signal. | • (After TCF is output before the image signal)<br>Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the image signal or Q signal. |
| • (After TCF is output before the image signal)<br>The other party's machine malfunctions due to echo. | • (After TCF is output before the image signal)<br>(1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) When registering in autodial, add a long pause after the telephone number so there will be no response to the other party's first DIS.<br>(3) When calling manually, press the start button after you have heard the other party's first DIS. |


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| ##0101 [TX/RX] Modem speed does not match other party's machine | |
|---|---|
| Cause | Countermeasure |
| • (At time of transmission)<br>Modem speed does not match that of the other party's machine. | • (At time of transmission)<br>No countermeasure is possible because modem speed is a specification of the machine. |
| • (At time of transmission)<br>Speed does not the other party's machine in fall back. | • (At time of transmission)<br>(1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive TCF.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive TCF.<br>(3) When registering in autodial, add a long pause after the telephone number so there will be no response to the other party's first DIS.<br>(4) When calling manually, press the start button after you have heard the other party's first DIS. |
| • (At time of reception)<br>Modem speed does not match that of the other party's machine. | • (At time of reception)<br>No countermeasure is possible because modem speed is a specification of the machine. |

| ##0102 [TX] Fall back not possible at time of transmission | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and TCF is not properly transmitted. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive TCF.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive TCF. |
| • The other party's machine malfunctions due to echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) When registering in autodial, add a long pause after the telephone number so there will be no response to the other party's first DIS.<br>(3) When calling manually, press the start button after you have heard the other party's first DIS.<br>(4) Have the other party lower the output level so the other party's machine will not receive echoes. |

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| ##0103 [RX] EOL can not be detected for 5 seconds during reception | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the image signal can not be properly received. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the image signal.<br>(2) Have the other party lower the other machine's transmission start speed.<br>(3) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the image signal. |
| • Malfunction due to CFR echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) Lower the modem output level in #2 MENU parameter 007, so the transmitted CFR echo is not received. |

| ##0104 [TX] RTN or PIN received at time of transmission | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the image signal can not be properly received by the other party's machine. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the image signal.<br>(2) Lower the Tx start speed in user mode system settings.<br>(3) Add an echo protect tone to the V29 modem signal in #1 SSSW-SW03 Bit 1.<br>(4) Have the other party ease the RTN transmission conditions for their machine so that RTN will not be transmitted by the other party's machine.<br>(5) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the image signal. |
| • The other party's machine malfunctions due to echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures<br>(2) When registering in autodial, add a long pause after the telephone number so there will be no response to the other party's first DIS.<br>(3) When calling manually, press the start button after you have heard the other party's first DIS.<br>(4) Have the other party lower the output level so the other party's machine will not receive echoes. |


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| ##0106 [RX] Protocol signal can not be received for 6 seconds in protocol signal standby during reception | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the protocol signal can not be properly received by other party's machine.<br>• The line condition is poor and the image signal can not be properly received by the other party's machine.<br>• Malfunction due to echo. | • Have the other party raise the output level so the protocol signal can be properly received.<br>• Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the signal.<br>(1) Refer to #1 SSSW-SW03 for echo countermeasures<br>(2) Lower the modem output level in #2 MENU parameter 007, so the transmitted CFR echo is not received. |

| ##0107 [RX] Fall back not possible for the transmitting machine during reception | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor. After a 2400 bit/s signal is received, the signal from the other party's machine is not properly received. | (1) Have the other party's machine's output level raised so the other party's machine's signal is properly received.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the TCF.<br>(3) Ease the RTN transmission conditions by #3 NUMERIC Param. 002-004, so RTN is not output. |
| • Malfunction due to echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) Lower the modem output level in #2 MENU parameter 007, so the transmitted signal's echo is not received. |

| ##0109 [TX] Signals other than DIS, DTC, FTT, CFR and CRP are received and the limit for the number of protocol signal re-transmissions is exceeded after DCS output during transmission | |
|---|---|
| Cause | Countermeasure |
| • Protocol signal abnormality. | • Record the Communication protocol on DAT and request it to be analyzed by the Technical Center. |

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| ##0111 [TX/RX] Memory error | |
|---|---|
| Cause | Countermeasure |
| • Data error occurs due to noise during printing output of data stored in image memory.<br>• Mis-dialing was attempted due to noise. (The telephone number pointer for printing/display does not match the pointer for dialing.) | • Output all data, then clear all data and reregister the data.<br>• Replace the modem board. |

| ##0114 [RX] RTN is output at time of reception | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the image signal can not be properly received from the other party's machine. | (1) Have the other party's machine's output level raised so the image signal can be properly received.<br>(2) Have the other party's machine's transmission start speed lowered.<br>(3) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the image signal.<br>(4) Ease the RTN transmission conditions by #3 NUMERIC Param. 002-004, so RTN is not output. |
| • Malfunction due to CFR echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) Lower the modem output level in #2 MENU parameter 007, so the output CFR echo is not received. |

| ##0200 [RX] Carrier can not be detected for 5 seconds during image reception during reception | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the image signal can not be properly received. | (1) Have the other party's machine's output level raised so the image signal can be properly received.<br>(2) Have the other party's machine's transmission start speed lowered. |
| • Time limit is exceeded because the training signal can not be received due to CFR echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) Lower the modem output level in #2 MENU parameter 007, so the output CFR echo is not received. |


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| ##0201 [TX/RX] DCN reception by other than normal binary protocol | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine is not capable of reception. (No paper) | • Have the other party's machine set so that it can receive. (Set paper) |
| • User's telephone number is not registered. (When the other party's machine is a Ricoh 3000L) | • Register the user's telephone number. |
| • Password does not match for polling reception. | • When the other party's machine is the same model, contact the other party and synchronize the passwords. When the other party's machine is made by another manufacturer, contact the other party and have them set the machine so that is can perform polling transmission. |
| • Document is not set for polling transmission. | • Set the document and have the other party's machine call again. |
| • Reception was attempted but there is no paper. | • Set paper. |
| • The line condition is poor and the other party's machine can not properly receive the protocol signal. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the protocol signal. |
| • Malfunction due to echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures<br>(2) Lower the modem output level in #2 MENU parameter 007, so the output echo is not received. |
| • Image signal or Q signal can not be received. The other party's machine has exceeded the limit for number of protocol signal re-transmissions. | (1) Have the other party's machine's output level raised so the other party's machine's signal is properly received.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the signal.<br>(3) Have the other party's machine's transmission start speed lowered. |
| • The line condition is poor and the other party's transmitting machine can not fall back. | (1) Ease the RTN transmission conditions by #3 NUMERIC Param. 002-004, so RTN is not output.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the signal is properly received. |

| ##0224 [TX/RX] Trouble occurs in the protocol signal during G3 communications | |
|---|---|
| Cause | Countermeasure |
| • Protocol signal fault. | • Record the communication protocol on DAT and analyze it. |

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| ##226 [TX/RX] System error (main program error) | |
|---|---|
| Cause | Countermeasure |
| • CPU malfunctioned due to noise. | • Turn the power off then on. |

| ##229 [RX] Memory reception due to recording system lock | |
|---|---|
| Cause | Countermeasure |
| • Unknown. | • Press the start key and print the image. |

| ##0232 [TX] ENCODE control unit malfunction | |
|---|---|
| Cause | Countermeasure |
| • ENCODE control's UPI operation did not end normally. | • Replace the image processor PCB. |

| ##0237 [RX] DECODE control unit malfunction | |
|---|---|
| Cause | Countermeasure |
| • DECODE control's UPI operation did not end normally. | • Replace image processor PCB. |

| ##0238 [RX] PRINT control unit malfunction | |
|---|---|
| Cause | Countermeasure |
| • PRINT control's UPI operation did not end normally. | • Replace the DC controller PCB. |


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| ##0261 [TX/RX] System error occurred between modem and gate array | |
|---|---|
| Cause | Countermeasure |
| • Internal unit fault (When RS became 1, CS did not become 1.) | • Replace the modem PCB. |

| ##0280 [TX] Limit for the number of protocol signal re-transmissions is exceeded during transmission | |
|---|---|
| Cause | Countermeasure |
| • Output level is low. After TCF output the other party's machine can not properly receive the appropriate signal. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the appropriate signal. |
| • Other party's machine malfunctioned due to echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) When registering in autodial, add a long pause after the telephone number so there will be no response to the other party's first DIS.<br>(3) When calling manually, press the start button after you have heard the other party's first DIS.<br>(4) Have the other party lower the output level so the other party's machine will not receive echoes. |

| ##0281 [TX] Limit for the number of protocol signal re-transmissions is exceeded during transmission | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor. After EOP output the appropriate signal can not be received because the image signal or EOP signal is not being properly transmitted. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the image signal or EOP signal.<br>(2) Lower the Tx start speed in user mode system settings.<br>(3) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the image signal or EOP signal.<br>(4) Add an echo protect tone to the V29 modem signal in #1 SSSW-SW03 Bit 1. |

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| ## 0282 [TX] Limit for the number of protocol signal re-transmissions is exceeded during transmission | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor. After EOM output the appropriate signal can not be received because the image signal or EOM signal is not being properly transmitted. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the image signal or EOM signal.<br>(2) Lower the Tx start speed in user mode system settings.<br>(3) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the image signal or EOM signal.<br>(4) Add an echo protect tone to the V29 modem signal in #1 SSSW-SW03 Bit 1. |

| ##0283 [TX] Limit for the number of protocol signal re-transmissions is exceeded during transmission | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor. After MPS output the appropriate signal can not be received because the image signal or MPS signal is not being properly transmitted. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the image signal or MPS signal.<br>(2) Lower the Tx start speed in user mode system settings.<br>(3) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the image signal or MPS signal.<br>(4) Add an echo protect tone to the V29 modem signal in #1 SSSW-SW03 Bit 1. |


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| ##0284 [TX] TCF output malfunction, DCN received during transmission | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine can not receive. (no paper) | • Contact the other party and have the machine set so it can receive. |
| • User's telephone number is not registered. (When the other party's machine is a Ricoh 3000L) | • Register the user's telephone number. |
| • The other party's machine can not receive. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can receive. |
| • The other party's machine malfunctions due to echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) When registering in autodial, add a long pause after the telephone number so there will be no response to the other party's first DIS.<br>(3) When calling from the numeric key pad, press the start button after you have heard the other party's first DIS.<br>(4) Have the other party raise the output level so the other party's machine will not receive echoes. |
| • A relay origination was issued to the other party's machine, but the other party's machine is in the midst of a relay broadcast. | • Wait and resend at another time. |

| ##0285 [TX] DCN received after EOP output at time of transmission | |
|---|---|
| Cause | Countermeasure |
| • Stop key is pressed during communications. | • Resend. |

| ##0286 [TX] DCN received after EOM output at time of transmission | |
|---|---|
| Cause | Countermeasure |
| • Stop key is pressed during communications. | • Resend. |

| ##0287 [TX] DCN received after MPS output at time of transmission | |
|---|---|
| Cause | Countermeasure |
| • Stop key is pressed during communications. | • Resend. |

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| ##0288 [TX] Signal other than PIN, PIP, MCF, RTP, RTN received after EOP output at time of transmission | |
|---|---|
| Cause | Countermeasure |
| • Protocol signal abnormality. | • Record the communication procedure sound on DAT and analyze it. |

| ##0289 [TX] Signal other than PIN, PIP, MCF, RTP, RTN received after EOM output at time of transmission | |
|---|---|
| Cause | Countermeasure |
| • Protocol signal abnormality. | • Record the communication procedure sound on DAT and analyze it. |

| ##0290 [TX] Signal other than PIN, PIP, MCF, RTP, RTN received after MPS output at time of transmission | |
|---|---|
| Cause | Countermeasure |
| • Protocol signal abnormality. | • Record the communication procedure sound on DAT and analyze it. |

| ##0322 [RX] Fixing assembly failure | |
|---|---|
| Cause | Countermeasure |
| • Internal unit fault. | (1) Check if the fixing assembly is properly installed in the printer unit.<br>(2) Remove the fixing assembly and check the resistance values in the fixing assembly connector terminals.<br>When room temperature is 20°C<br>J161 (AC side)<br>between 1P and 3P: 18Ω ± 7%<br>between 2P and 3P: 18Ω ± 7%<br>J161 (DC side)<br>between 1P and 2P: approx. 1755Ω<br>When the resistance values are off, replace the fixing assembly.<br>(3) Replace the DC controller PCB. |


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| ##0323 [RX] Abnormal nBD signal output in the laser scanner unit | |
|---|---|
| Cause | Countermeasure |
| • Internal unit fault. (laser light intensity does not meet the specification) | (1) Check the connection of the cable between the laser scanner unit and the DC controller PCB.<br>(2) Replace the laser scanner unit.<br>(3) Replace the DC controller PCB. |
| • Internal unit fault. (abnormal nBD signal timing) | (1) Check the connection of the cable between the laser scanner unit and the DC controller PCB.<br>(2) Replace the laser scanner unit.<br>(3) Replace the DC controller PCB. |

| ##0324 [RX] Abnormal number of laser scanner motor revolutions | |
|---|---|
| Cause | Countermeasure |
| • Internal unit fault. | (1) Check the connection of the cable between the laser scanner unit and the DC controller PCB.<br>(2) Replace the laser scanner unit.<br>(3) Replace the DC controller PCB. |

| ##0325 [RX] Main motor/exhaust fan trouble | |
|---|---|
| Cause | Countermeasure |
| • Internal unit fault. (main motor does not turn) | (1) Check the connection between the main motor and the DC controller PCB.<br>(2) Check that the main motor is not over-loaded.<br>(3) Replace the main motor.<br>(4) Replace the DC controller PCB. |
| • Internal unit fault. (exhaust fan does not turn) | (1) Check the connection between the fan and the DC controller PCB.<br>(2) Replace the fan<br>(3) Replace the DC controller PCB. |

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| ##0671 [RX] Line is released due to T1 time-out when the procedure does not proceed beyond phase 2 after detection of CM signal on the calling side at the time a V.8 call is received | |
|---|---|
| Cause | Countermeasure |
| • The caller's line is cut at phase 1 or the caller's signal is not detected. | • Prohibit the caller's V.8/V.34 protocol with #1 SSSW-SW28 Bit 1.<br>Adjust the output level to a range of -8 to -15dBm. |

| ##0672 [TX] Line is released due to T1 time-out when the procedure does not proceed from phase 2 to beyond phase 3 during V.34 transmission | |
|---|---|
| Cause | Countermeasure |
| • The recipient's line is cut at phase 1 or the recipient's signal is not detected. | • Prohibit the caller's V.8/V.34 protocol with #1 SSSW-SW28 Bit 0.<br>Adjust the output level to a range of -8 to -15dBm. |

| ##0673 [RX] Line is released due to T1 time-out when the procedure does not proceed from phase 2 to beyond phase 3 during V.34 reception | |
|---|---|
| Cause | Countermeasure |
| • The transmitter's line is cut at phase 2 or the transmitter's signal is not detected. | • Prohibit the caller's V.8/V.34 protocol with #1 SSSW-SW28 Bit 1.<br>Adjust the output level to a range of -8 to -15dBm. |

| ##0674 [TX] Line is released due to T1 time-out when the procedure does not proceed from phase 3 and phase 4 to beyond the control channel during V.34 transmission | |
|---|---|
| Cause | Countermeasure |
| • The transmitter's line is cut at phase 3 or phase 4, or the recipient's signal is not detected. | • Prohibit the caller's V.8/V.34 protocol with #1 SSSW-SW28 Bit 0.<br>Adjust the output level to a range of -8 to -15dBm. |


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| ##0675 [RX] Line is released due to T1 time-out when the procedure does not proceed from phase 3 and phase 4 to beyond the control channel during V.34 transmission | |
|---|---|
| Cause | Countermeasure |
| • The transmitter's line is cut at phase 3 or phase 4, or the transmitter's signal is not detected | • Prohibit the caller's V.8/V.34 protocol with #1 SSSW-SW28 Bit 1.<br>Adjust the output level to a range of -8 to -15dBm. |

| ##0750 [TX] A significant signal is not received and the number of protocol signal re-transmissions is exceeded after PPS-NULL output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and PPS-NULL is not properly transmitted. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive PPS-NULL.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive PPS-NULL.<br>(3) Add an echo protect tone to the V29 modem signal in #1 SSSW-SW03 Bit 1. |
| • The line is poor and the signal can not be received properly. | • Have the other party's machine's output level raised so the signal can be received properly. |

| ##0752 [TX] DCN received after PPS-NULL transmission | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and PPS-NULL can not be properly received. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive PPS-NULL. |
| • The stop button was pressed during communications. | • Resend. |

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| ##0753 [TX] Limit for the number of protocol signal re-transmissions is exceeded or T5 time limit (60 seconds) is exceeded after PPS-NULL output | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine's page buffer is full, or RNR was received after output of PPS-NULL because the machine was in use, and after RR output a significant signal could not be properly received. | (1) Set ECM Tx to "OFF" in the user mode data entry's Tx settings function settings<br>(2) Lower the Tx speed setting in the user mode. |

| ##0754 [TX] Limit for number of protocol signal re-transmissions is exceeded after PPS-NULL output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor. After PPS-NULL output, PPR was received 4 times and CTC was output, but the other party's machine can not receive properly. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive CTC. |
| • The line condition is poor. After PPS-NULL output, PPR was received 4 times and CTC was output, but a significant signal can not be properly received. | • Have the other party raise the output level so the signal can be received properly. |

| ##0755 [TX] A significant signal can not be detected and the limit for number of protocol signal re-transmissions is exceeded after PPS-MPS output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and PPS-MPS is not transmitted properly. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive PPS-MPS.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive PPS-MPS.<br>(3) Add an echo protect tone to the V29 modem signal in #1 SSSW-SW03 Bit 1. |
| • The line condition is poor and the signal can not be received properly. | • Have the other party's machine's output level raised so the signal can be received properly. |


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| ##0757 [TX] DCN received after PPS-MPS output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and PPS-MPS can not be properly received.<br>• The stop button was pressed during communications. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive PPS-MPS.<br>• Resend. |

| ##0758 [TX] Limit for the number of protocol signal re-transmissions is exceeded or T5 time limit (60 seconds) is exceeded after PPS-MPS output | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine's page buffer is full, or RNR was received after output of PPS-MPS because the machine was in use, and after RR output a significant signal could not be properly received. | (1) Set ECM Tx to "OFF" in the user mode data entry's Tx settings.<br>(2) After registering one-touch or coded dialing in the user mode, lower Tx speed setting using detailed settings. |

| ##0759 [TX] Limit for number of protocol signal re-transmissions is exceeded after PPS-MPS output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor. After PPS-MPS output, PPR was received 4 times and CTC was output, but the other party's machine can not receive properly.<br>• The line condition is poor. After PPS-MPS output, PPR was received 4 times and CTC was output, but a significant signal can not be properly received. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive CTC.<br>• Have the other party raise the output level so the signal can be received properly. |

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| ##0760 [TX] A significant signal can not be detected and the limit for number of protocol signal re-transmissions is exceeded after PPS-EOM output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the other party's machine can not receive PPS-EOM properly. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive PPS-EOM.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive PPS-EOM.<br>(3) Add an echo protect tone to the V29 modem signal in #1 SSSW-SW03 Bit 1. |
| • The line condition is poor and the signal can not be received properly. | • Have the other party's machine's output level raised so the signal can be received properly. |

| ##0762 [TX] DCN received after PPS-EOM output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and PPS-EOM can not be properly received. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive PPS-EOM. |
| • The stop button was pressed during communications. | • Resend. |

| ##0763 [TX] Limit for the number of protocol signal re-transmissions is exceeded or T5 time limit (60 seconds) is exceeded after PPS-EOM output | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine's page buffer is full, or RNR was received after output of PPS-EOM because the machine was in use, and after RR output a significant signal could not be properly received. | (1) Set ECM Tx to "OFF" in the user mode data entry's Tx settings.<br>(2) After registering one-touch or coded dialing in the user mode, lower Tx speed setting using detailed settings. |


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| ##0764 [TX] Limit for number of protocol signal re-transmissions is exceeded after PPS-EOM output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor. After PPS-EOM output, PPR was received 4 times and CTC was output, but the other party's machine can not receive properly. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive CTC. |
| • The line condition is poor. After PPS-EOM output, PPR was received 4 times and CTC was output, but a significant signal can not be properly received. | • Have the other party raise the output level so the signal can be received properly. |

| ##0765 [TX] A significant signal can not be detected and the limit for number of protocol signal re-transmissions is exceeded after PPS-EOP output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the other party's machine can not receive PPS-EOP properly. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive PPS-EOP.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive PPS-EOP.<br>(3) Add an echo protect tone to the V29 modem signal in #1 SSSW-SW03 Bit 1. |
| • The line condition is poor and the signal can not be received properly. | • Have the other party's machine's output level raised so the signal can be received properly. |

| ##0767 [TX] DCN received after PPS-EOP output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and PPS-EOP can not be properly received. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive PPS-EOP. |
| • The stop button was pressed during communications. | • Resend. |

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| ##0768 [TX] Limit for the number of protocol signal re-transmissions is exceeded or T5 time limit (60 seconds) is exceeded after PPS-EOP output | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine's page buffer is full, or RNR was received after output of PPS-EOP because the machine was in use, and after RR output a significant signal could not be properly received. | (1) Set ECM Tx to "OFF" in the user mode data entry's Tx settings.<br>(2) After registering one-touch or coded dialing in the user mode, lower Tx speed setting using detailed settings. |

| ##0769 [TX] Limit for number of protocol signal re-transmissions is exceeded after PPS-EOP output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor. After PPS-EOP output, PPR was received 4 times and CTC was output, but the other party's machine can not receive properly. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive CTC. |
| • The line condition is poor. After PPS-EOP output, PPR was received 4 times and CTC was output, but a significant signal can not be properly received. | • Have the other party raise the output level so the signal can be received properly. |

| ##0770 [TX] A significant signal can not be detected and the limit for number of protocol signal re-transmissions is exceeded after EOR-NULL output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the other party's machine can not receive EOR-NULL properly. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive EOR-NULL. |
| • The line condition is poor and the signal can not be received properly. | • Have the other party's machine's output level raised so the signal can be received properly. |


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| ##0772 [TX] DCN received after EOR-NULL output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and EOR-NULL can not be properly received. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive EOR-NULL. |
| • The line condition is poor and the signal can not be properly received. | • Resend. |

| ##0773 [TX] Limit for the number of protocol signal re-transmissions is exceeded or T5 time limit (60 seconds) is exceeded after EOR-NULL output | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine's page buffer is full, or RNR was received after output of EOR-NULL because the machine was in use, and after RR output a significant signal could. | (1) Set ECM Tx to "OFF" in the user mode data entry's Tx settings.<br>(2) After registering one-touch or coded dialing in the user mode, lower Tx speed setting using detailed settings. |

| ##0774 [TX] ERR received after EOR-NULL output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and frequently the other party's machine can not properly receive the image signal. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the image signal.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the image signal. |
| • The other party's machine malfunctions due to echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) When registering in autodial, add a long pause after the telephone number so there will be no response to the other party's first DIS.<br>(3) When calling using the dial button, manually press the start button after you have heard the other party's first DIS.<br>(4) Have the other party lower the output level so the other party's machine will not receive echoes. |

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| ##0775 [TX] A significant signal can not be detected and the limit for number of protocol signal re-transmissions is exceeded after EOR-MPS output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the other party's machine can not properly receive EOR-MPS.<br>• The line condition is poor and the signal can not be received properly. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive EOR-MPS.<br>• Have the other party's machine's output level raised so the signal can be received properly. |

| ##0777 [TX] DCN received after EOR-MPS output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the other party's machine can not properly receive EOR-MPS.<br>• The stop button was pressed during communications. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive EOR-MPS.<br>• Resend. |

| ##0778 [TX] Limit for the number of protocol signal re-transmissions is exceeded or T5 time limit (60 seconds) is exceeded after PPS-MPS output | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine's page buffer is full, or RNR was received after output of PPS-MPS because the machine was in use, and after RR output a significant signal could not be properly received. | (1) Set ECM Tx to "OFF" in the user mode data registration's Tx settings.<br>(2) After registering one-touch or coded dialing in the user mode, lower Tx speed setting using detailed settings. |


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| ##0779 [TX] ERR received after EOR-MPS output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and frequently the other party's machine can not properly receive the image signal. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the image signal.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the image signal. |
| • The other party's machine malfunctions due to echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) When registering in autodial, add a long pause after the telephone number so there will be no response to the other party's first DIS.<br>(3) When calling manually, press the start button after you have heard the other party's first DIS.<br>(4) Have the other party lower the output level so the other party's machine will not receive echoes. |

| ##0780 [TX] A significant signal can not be detected and the limit for number of protocol signal re-transmissions is exceeded after EOR-EOM output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the other party's machine can not properly receive EOR-EOM. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive EOR-EOM. |
| • The line condition is poor and the signal can not be received properly. | • Have the other party's machine's output level raised so the signal can be received properly. |

| ##0782 [TX] DCN received after EOR-EOM output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the other party's machine can not properly receive EOR-EOM. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive EOR-EOM. |
| • The stop button was pressed during communications. | • Resend. |

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| ##0783 [TX] Limit for the number of protocol signal re-transmissions is exceeded or T5 time limit (60 seconds) is exceeded after PPS-EOM output | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine's page buffer is full, or RNR was received after output of PPS-EOM because the machine was in use, and after RR output a significant signal could not be properly received. | (1) Set ECM Tx to "OFF" in the user mode data registration's Tx settings.<br>(2) After registering one-touch or coded dialing in the user mode, lower Tx speed setting using detailed settings. |

| ##0784 [TX] ERR received after EOR-EOM output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and frequently the other party's machine can not properly receive the image signal. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the image signal.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the image signal. |
| • The other party's machine malfunctions due to echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) When registering in autodial, add a long pause after the telephone number so there will be no response to the other party's first DIS.<br>(3) When calling manually, press the start button after you have heard the other party's first DIS.<br>(4) Have the other party lower the output level so the other party's machine will not receive echoes. |

| ##0785 [TX] A significant signal can not be detected and the limit for number of protocol signal re-transmissions is exceeded after EOR-EOP output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the other party's machine can not properly receive EOR-EOP.<br>• The line condition is poor and the signal can not be received properly. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive EOR-EOP.<br>• Have the other party's machine's output level raised so the signal can be received properly. |


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| ##0787 [TX] DCN received after EOR-EOP output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the other party's machine can not properly receive EOR-EOP.<br>• The stop button was pressed during communications. | • Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive EOR-EOP.<br>• Resend. |

| ##0788 [TX] Limit for the number of protocol signal re-transmissions is exceeded or T5 time limit (60 seconds) is exceeded after EOR-EOP output | |
|---|---|
| Cause | Countermeasure |
| • The other party's machine's page buffer is full, or RNR was received after output of EOR-EOP because the machine was in use, and after RR output a significant signal could not be properly received. | (1) Set ECM Tx to "OFF" in the user mode data registration's Tx settings.<br>(2) After registering one-touch or coded dialing in the user mode, lower Tx speed setting using detailed settings. |

| ##0789 [TX] ERR received after EOR-EOP output | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and frequently the other party's machine can not properly receive the image signal. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the image signal.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the image signal. |
| • The other party's machine malfunctions due to echo. | (1) Refer to #1 SSSW-SW03 for echo countermeasures.<br>(2) When registering in autodial, add a long pause after the telephone number so there will be no response to the other party's first DIS.<br>(3) When calling manually, press the start button after you have heard the other party's first DIS.<br>(4) Have the other party lower the output level so the other party's machine will not receive echoes. |

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| ##0790 [RX] ERR output after EOR-Q reception | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and frequently the other party's machine can not properly receive the image signal. | (1) Have the other party's machine's output level raised so the signal can be received properly.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the image signal. |
| • The other party's machine malfunctions due to echo. | • Refer to #1 SSSW-SW03 for echo countermeasures. |

| ##0791 [TX/RX] Signal other than a significant signal received during ECM mode procedure | |
|---|---|
| Cause | Countermeasure |
| • Protocol signal abnormality | (1) Record the communication signal on DAT and analyze it. |

| ##0793 [RX] Valid frame can not be detected and the time limit is exceeded during high-speed signal reception | |
|---|---|
| Cause | Countermeasure |
| • The line condition is poor and the other party's machine can not receive the signal properly. | (1) Raise the modem output level in #2 MENU parameter 007, so the other party's machine can properly receive the signal.<br>(2) Adjust the NL equalizer in #2 MENU parameter 005, so the other party's machine can properly receive the signal. |
| • The line condition is poor and the signal can not be received properly. | (1) Have the other party's machine's status speed lowered.<br>(2) Have the other party's machine's output level raised so the signal can be received properly. |
| • The communication codec is busy. | (1) Turn the power off then on.<br>(2) Replace the FAX PCB. |


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| ##0795 [TX/RX] Problem occurred in the ?communications? decoding processing | |
|---|---|
| Cause | Countermeasure |
| • The communication codec is busy. | (1) Turn the power off then on.<br>(2) Replace the FAX PCB. |

| ##0799 [TX] System error | |
|---|---|
| Cause | Countermeasure |
| • EOR output attempted during speed dial procedure. | (1) Turn the power off then on.<br>(2) Replace the FAX PCB. |

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# APPENDIX


A. GENERAL TIMING CHART.....A-1
B. SIGNALS AND ABBREVIATIONS.....A-3
C. GENERAL CIRCUIT DIAGRAM .....A-5
D. LIST OF SPECIAL TOOLS.....A-11
E. SOLVENTS AND OILS.....A-12



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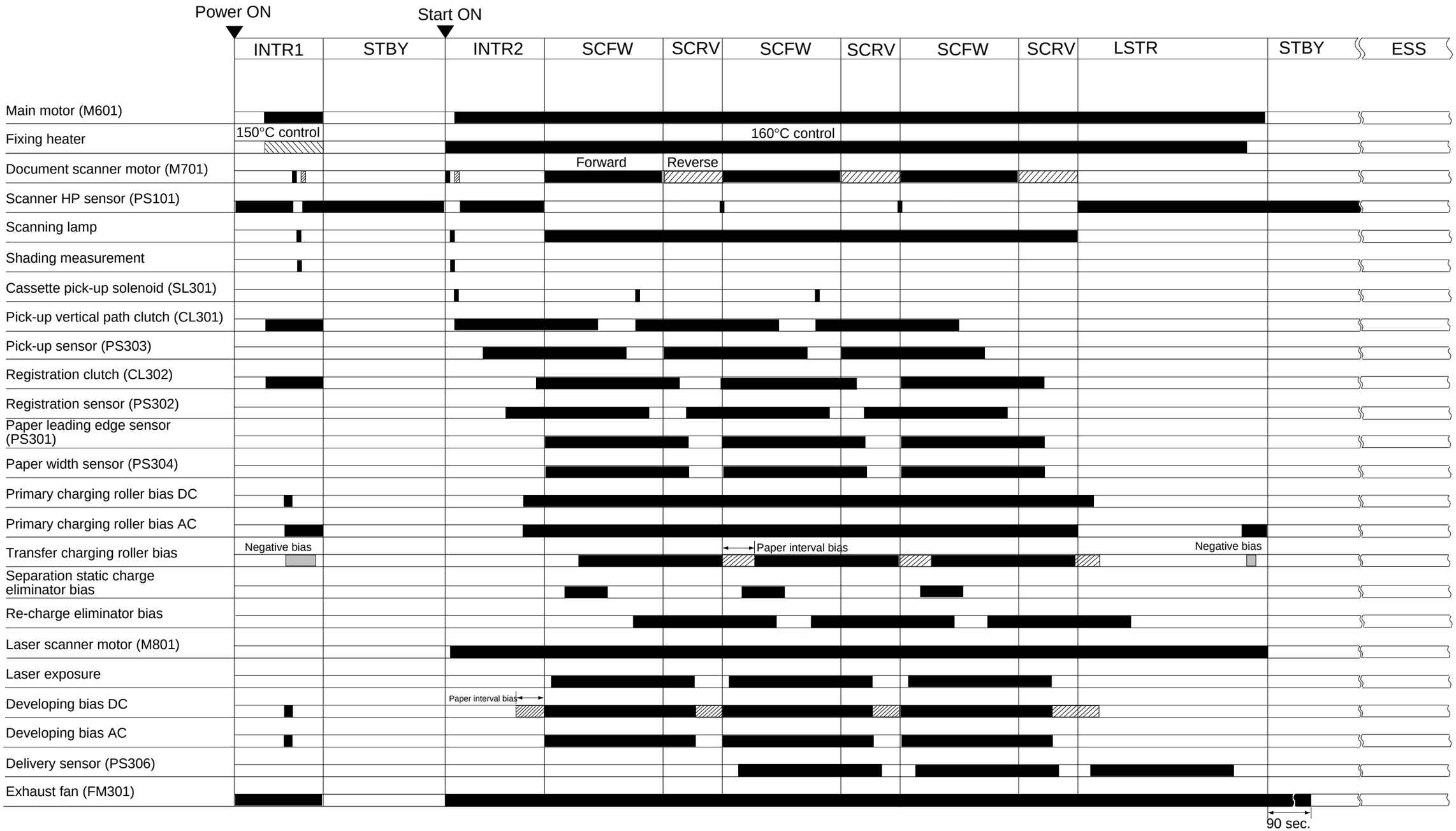
# APPENDIX

## A. GENERAL TIMING CHART

• Conditions: Copy / A4 paper / main unit cassette pick-up / 3 sheets

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# B. SIGNALS AND ABBREVIATIONS

| | |
|---|---|
| 600 | LASER INTENSITY SWITCH signal |
| 1200DPI | BIAS SWITCH signal |
| ACC | LASER SCANNER MOTOR ACCELERATE command |
| BDI | BEAM DETECTION INPUT signal |
| CVROPN | FRONT COVER OPEN signal |
| CL301D | VERTICAL PATH ROLLER CLUTCH DRIVE command |
| CL302D | REGISTRATION CLUTCH DRIVE command |
| DCPWM | PRIMARY BIAS DC CONTROL signal |
| DCSON | STATIC ELIMINATOR BIAS DRIVE signal |
| DEC | LASER SCANNER MOTOR DECELERATE command |
| DVACON | DEVELOPING BIAS AC ON command |
| DVDUP | DEVELOPING BIAS DC ON command |
| ENBL | IMAGE FORMATION ACKNOWLEDGE signal |
| FSRDRV1 | FIXING HEATER 1 DRIVE command |
| FSRDRV2 | FIXING HEATER 2 DRIVE command |
| LMPON | SCANNING LAMP DRIVE command |
| LON | LASER ON command |
| MMD | MAIN MOTOR DRIVE command |
| MRDY | MAIN MOTOR READY signal |
| PRACON | PRIMARY BIAS AC CONTROL signal |
| PS101S | SCANNER HOME POSITION signal |
| PS102S | COPYBOARD COVER OPEN signal |
| PS301S | PAPER LEADING EDGE DETECTION signal |
| PS302S | REGISTRATION PAPER DETECTION signal |
| PS303S | PICK-UP PAPER DETECTION signal |
| PS304S | PAPER WIDTH DETECTION signal |
| PS305S | CASSETTE PAPER DETECTION signal |
| PS306S | DELIVERY DETECTION signal |
| PS501S | MULTIFEEDER PAPER signal |
| PSIZ0 | CASSETTE PAPER SIZE DETECTION signal 0 |
| PSIZ1 | CASSETTE PAPER SIZE DETECTION signal 1 |
| PSIZ2 | CASSETTE PAPER SIZE DETECTION signal 2 |
| PSIZ3 | CASSETTE PAPER SIZE DETECTION signal 3 |
| STMP | STAMP SOLENOID DRIVE command |
| TNRCHKD | CARTRIDGE CHECK DEVELOPING BIAS AC signal |
| TNRCHKT | CARTRIDGE ANTENNA OUTPUT signal |
| TRNFOT | TRANSFER NEGATIVE BIAS DRIVE command |
| TRPWM | TRANSFER POSITIVE BIAS DRIVE command |
| TSTON | |
| VDO | VIDEO signal |

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# C. GENERAL CIRCUIT DIAGRAM

## I. Image processor PCB

### Image processor PCB (1/3)

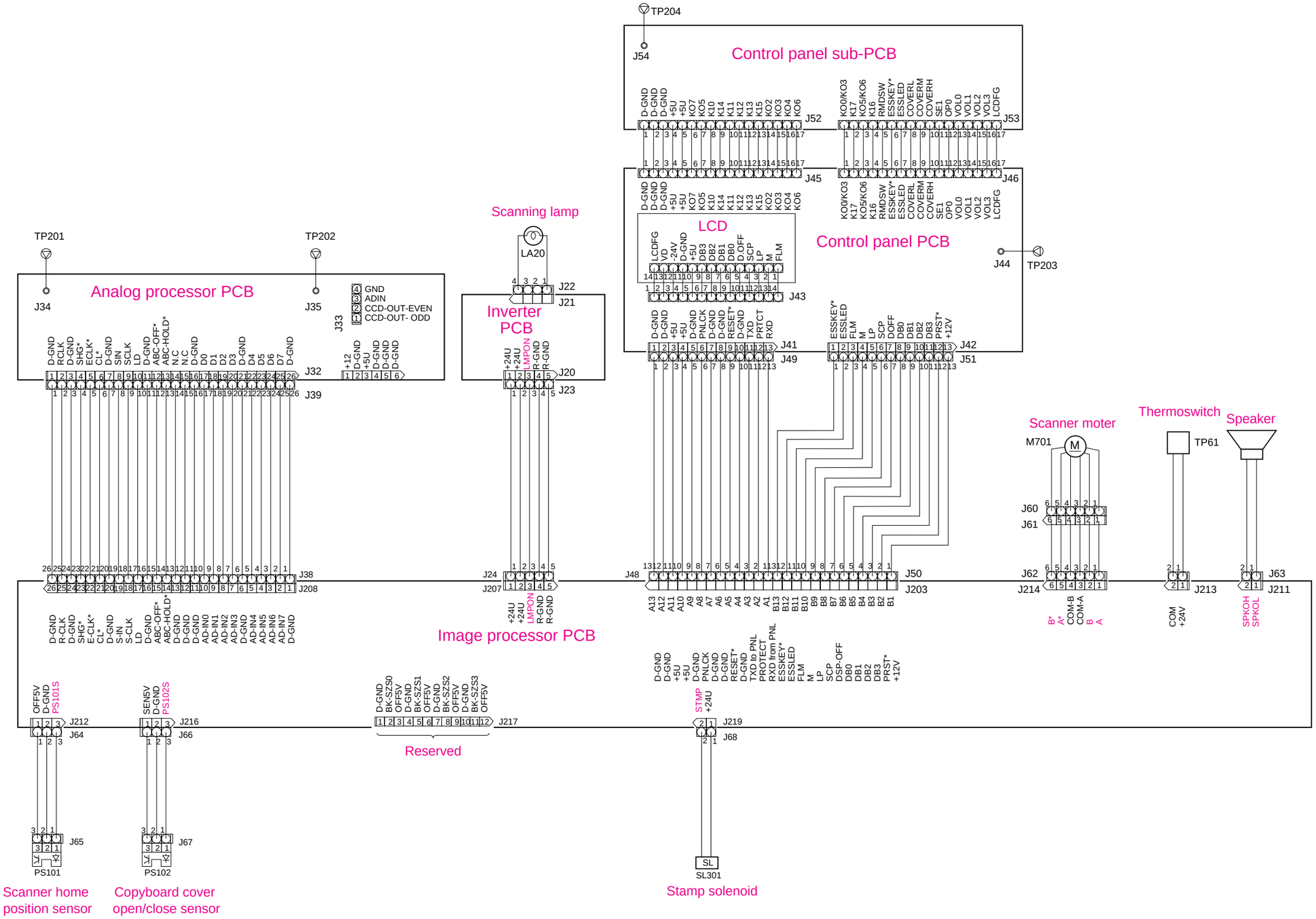


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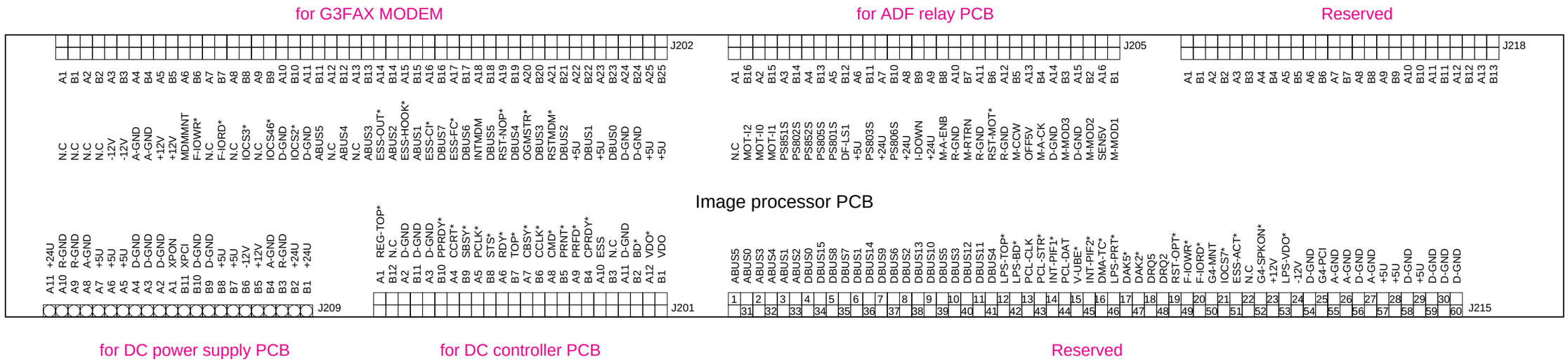
**Image processor PCB (2/3)**

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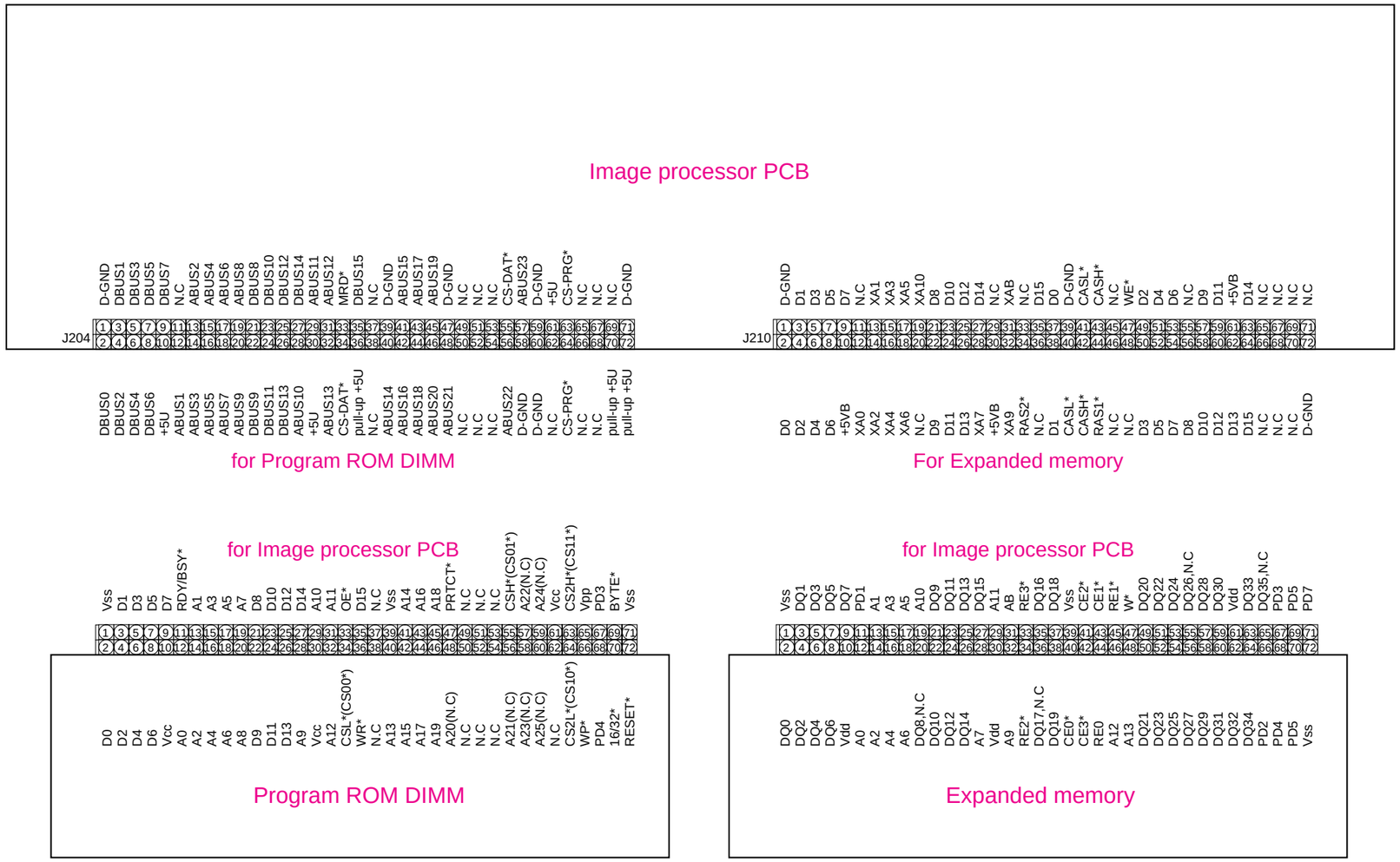
Image processor PCB
J204
D-GND DBUS1 DBUS3 DBUS5 DBUS7 N.C ABUS2 ABUS4 ABUS6 ABUS8 DBUS8 DBUS10 DBUS12 DBUS14 ABUS11 ABUS12 MRD* DBUS15 N.C D-GND ABUS15 ABUS17 ABUS19 D-GND N.C N.C N.C CS-DAT* ABUS23 D-GND +5U CS-PRG* N.C N.C N.C D-GND
DBUS0 DBUS2 DBUS4 DBUS6 +5U ABUS1 ABUS3 ABUS5 ABUS7 ABUS9 DBUS9 DBUS11 DBUS13 ABUS10 +5U ABUS13 CS-DAT* pull-up +5 N.C ABUS14 ABUS16 ABUS18 ABUS20 ABUS21 N.C N.C N.C ABUS22 D-GND D-GND N.C CS-PRG* N.C N.C pull-up +5 pull-up +5
for Program ROM DIMM
J210
D-GND D1 D3 D5 D7 N.C XA1 XA3 XA5 XA10 D8 D10 D12 D14 N.C XAB N.C D15 D0 D-GND CASL* CASH* N.C WE* D2 D4 D6 N.C D9 D11 +5VB D14 N.C N.C N.C N.C
D0 D2 D4 D6 +5VB XA0 XA2 XA4 XA6 N.C D9 D11 D13 XA7 +5VB XA9 RAS2* N.C D1 CASL* CASH* RAS1* N.C N.C D3 D5 D7 D8 D10 D12 D13 D15 N.C N.C N.C D-GND
For Expanded memory
for Image processor PCB
Vss D1 D3 D5 D7 RDY/BSY* A1 A3 A5 A7 D8 D10 D12 D14 A10 A11 OE* D15 N.C Vss A14 A16 A18 PRTCT* N.C N.C N.C CSH*(CS01*) A22(N.C) A24(N.C) Vcc CS2H*(CS11*) Vpp PD3 BYTE* Vss
D0 D2 D4 D6 Vcc A0 A2 A4 A6 A8 D9 D11 D13 A9 Vcc A12 CSL*(CS00*) WR* N.C A13 A15 A17 A19 A20(N.C) N.C N.C N.C A21(N.C) A23(N.C) A25(N.C) N.C CS2L*(CS10*) WP* PD4 16/32* RESET*
Program ROM DIMM
for Image processor PCB
Vss DQ1 DQ3 DQ5 DQ7 PD1 A1 A3 A5 A10 DQ9 DQ11 DQ13 DQ15 A11 AB RE3* DQ16 DQ18 Vss CE2* CE1* RE1* W* DQ20 DQ22 DQ24 DQ26,N.C DQ28 DQ30 Vdd DQ33 DQ35,N.C PD3 PD5 PD7
DQ0 DQ2 DQ4 DQ6 Vdd A0 A2 A4 A6 DQ8,N.C DQ10 DQ12 DQ14 A7 Vdd A9 RE2* DQ17,N.C DQ19 CE0* CE3* RE0 A12 A13 DQ21 DQ23 DQ25 DQ27 DQ29 DQ31 DQ32 DQ34 PD2 PD4 PD5 Vss
Expanded memory

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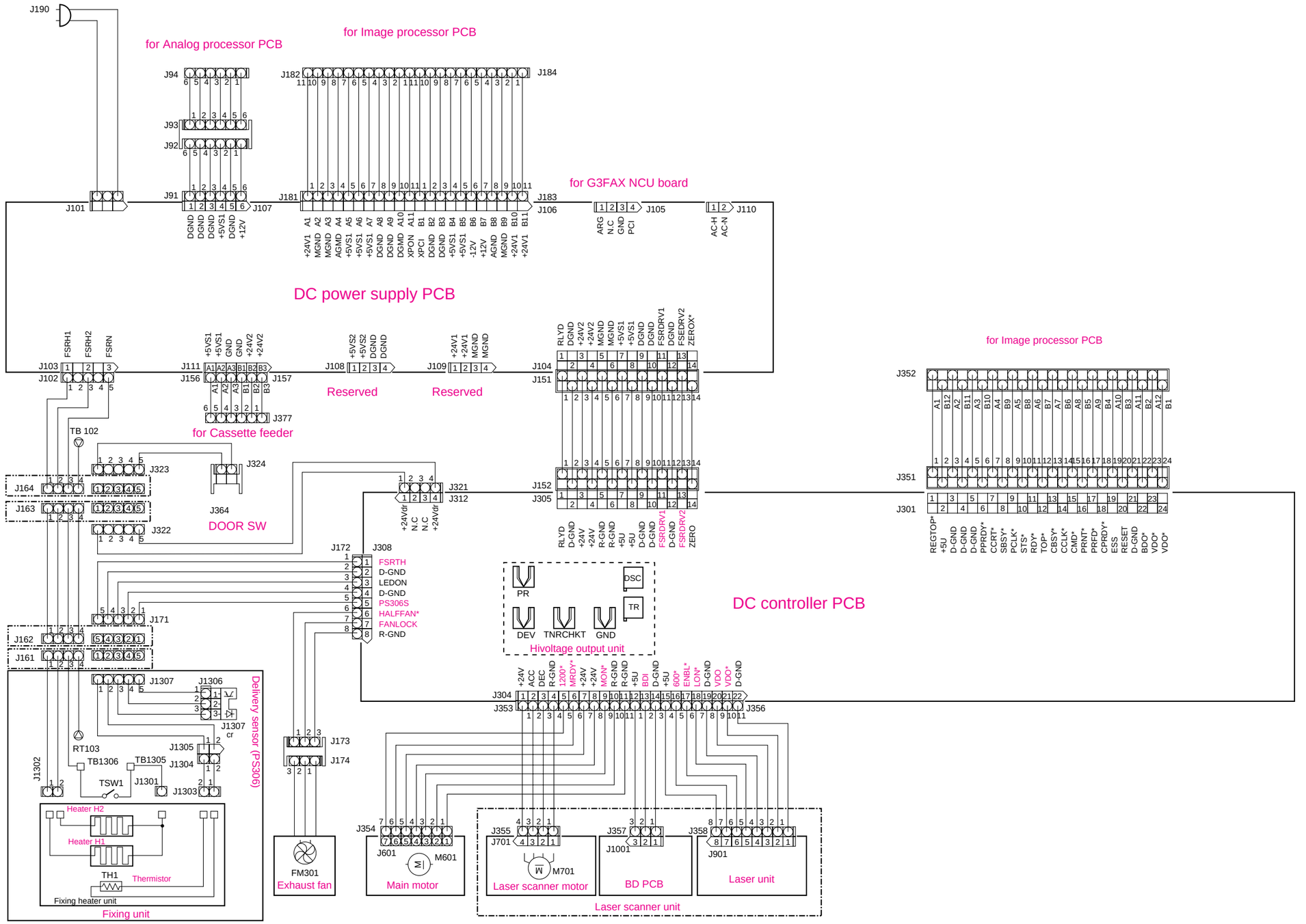
# II. DC controller PCB

## DC controller PCB (1/2)

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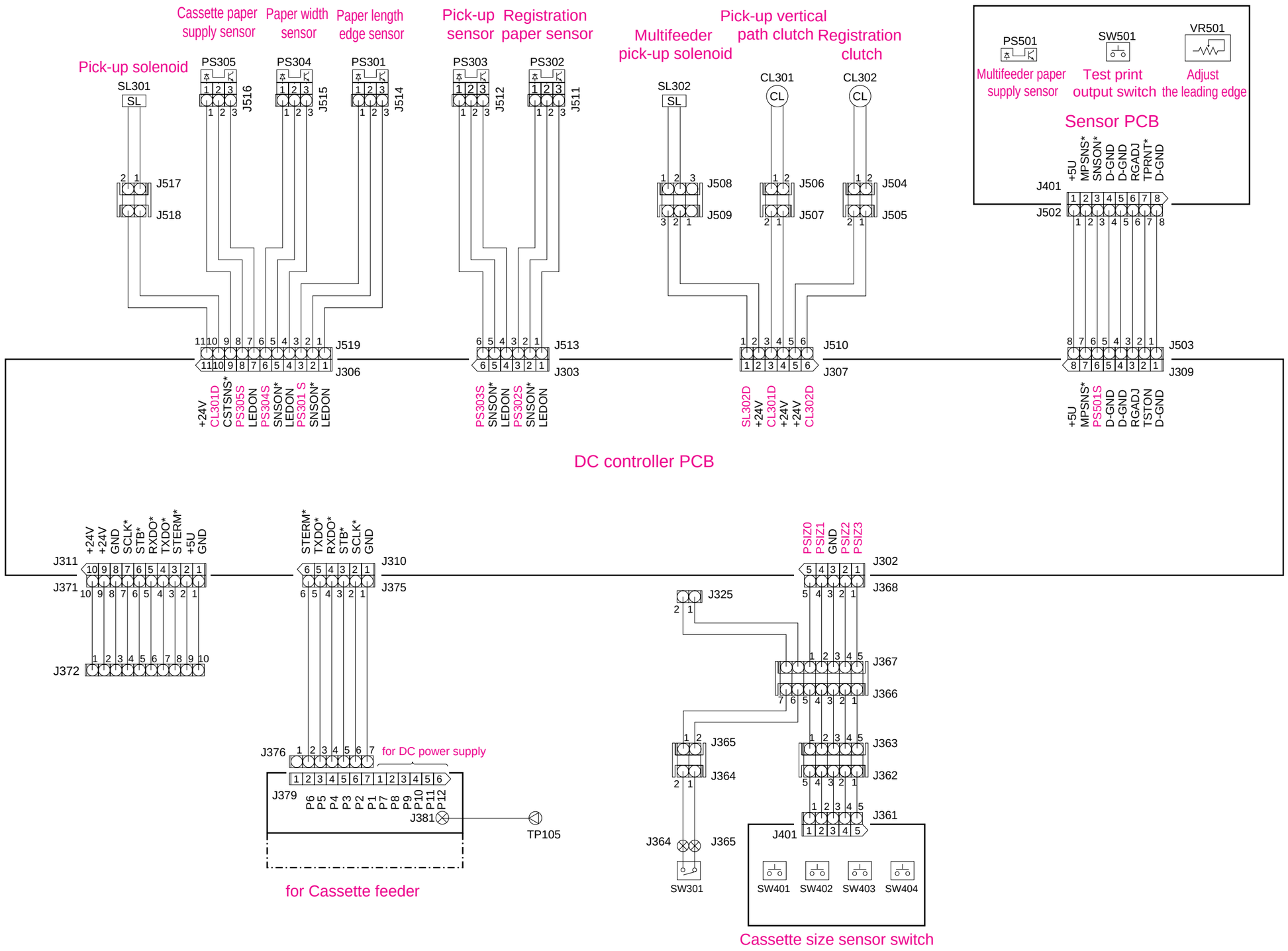


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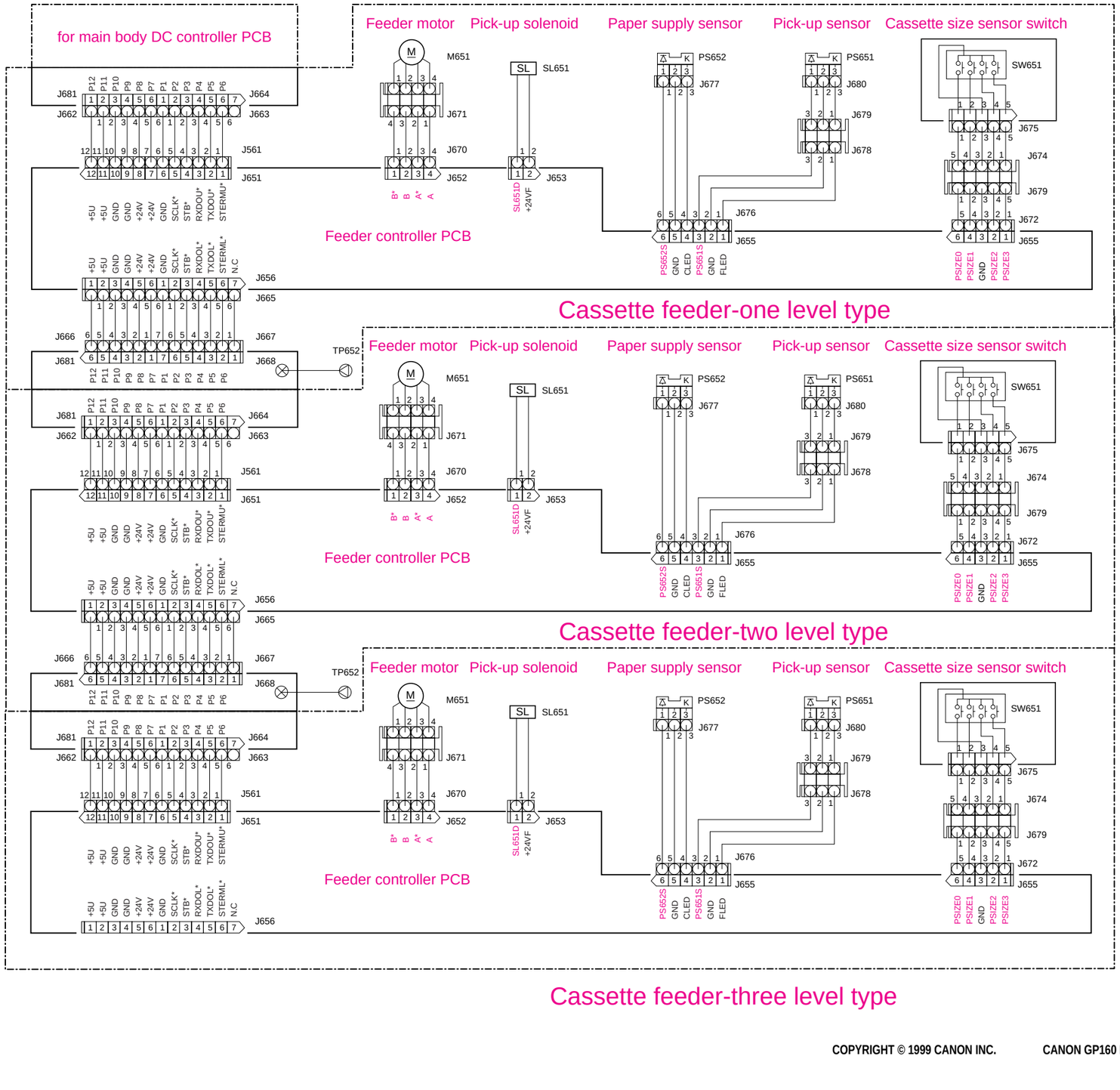
# III. Cassette Feeder

## Feeder controller PCB

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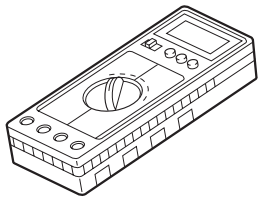
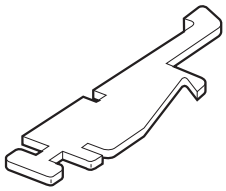
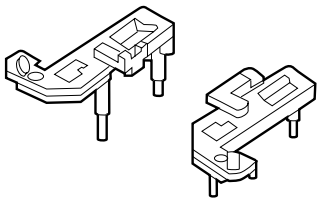
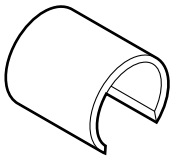
# D LIST OF SPECIAL TOOLS

The following are special tools used to service to copier: use them in addition the standard set of tools.

| No. | Tool Name | Tool No. | Shape | Rank | Remarks |
|---|---|---|---|---|---|
| 1 | Digital Multimeter | FY9-2002-000 |  | A | Use it to check the power. |
| 2 | Door switch acutuator | TKN-0093 |  | A | |
| 3 | Mirror positioning tool (front, rear) | FY9-3009-040 |  | B | For adjusting the distance between No.1 and No.2 mirror mounts. |
| 4 | Pulley clip | FY9-3010-000 |  | C | Scanner wire adjustment |

*Consult the following for a stocking idea.

A: Each service person is expected to carry one.
B: Each group of five service persons is expected to carry one.
C: Each workshop is expected to carry one.

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# E. SOLVENTS AND OILS

| No. | Name | Use | Composition | Remarks |
|---|---|---|---|---|
| 1 | Alcohol | Cleaning: e.g., glass, plastics (Note), and rubber parts and external covers. | Carbon hydrogen of fluorine family<br>Alcohol<br>Surface activating agent<br>Water | • C1, IPA (isopropyl alcohol) |
| 2 | Solvent | Cleaning; e.g., metal parts; removing oil or toner. | Carbon hydrogen of fluorine family<br>Alcohol<br>Carbon hydrogen of chlorine family | MEK |
| 3 | Lubricant | ADF drive gear. | Silicone oil | CK-8005 |
| 4 | Lubricant | | Mineral oil (paraffin family) | CK-0451 |


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**CANON INC.**
**Printed in Japan**

**REVISION 0 (FEB. 1999) [28319]**

**5-1, Hakusan 7-chome, Toride-shi, Ibaraki 302-8501 Japan**

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